

AD-A166 644 NAVAL WEAPONS STATION SEAL BEACH FLEET MOORINGS  
INSPECTION REPORT(U) NAVAL FACILITIES ENGINEERING  
COMMAND WASHINGTON DC CHESAPEAKE DIV 30 DEC 82  
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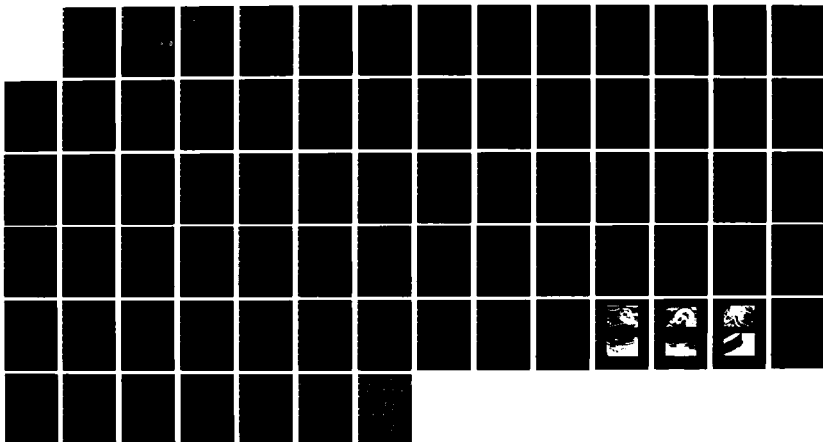
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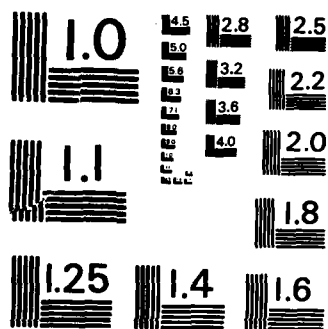
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**AD-A166 644**

# **NAVAL WEAPONS STATION SEAL BEACH FLEET MOORINGS INSPECTION REPORT**

**FPO-1-82 (30)**

**OCEAN ENGINEERING  
AND CONSTRUCTION PROJECT OFFICE  
CHESAPEAKE DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
WASHINGTON, D.C. 20374**

**30 DECEMBER 1982**

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This report contains results of the inspection of fleet moorings at the U.S.  
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Underwater Construction Team Two.

Results indicate a majority of the moorings are in satisfactory condition; however, because of the normal cycle of chain deterioration, several of the moorings are in need of immediate attention. Comments concerning the conditions of those in the latter category, along with recommended maintenance actions, are included.

### Abstract

This report contains results of the inspection of fleet moorings at the U.S. Naval Weapons Station, Seal Beach, California. The Ocean Engineering and Construction Project Office of CHESNAVFACENGCOM conducted the inspection from 30 August through 3 September 1982 with the support of divers from Underwater Construction Team Two.

Results indicate a majority of the moorings are in satisfactory condition; however, because of the normal cycle of chain deterioration, several of the moorings are in need of immediate attention. Comments concerning the condition of those in the latter category, along with recommended maintenance actions, are included.

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**U.S. NAVAL WEAPONS STATION (NWS)  
SEAL BEACH  
FLEET MOORING UNDERWATER INSPECTION REPORT**

**1.0 INTRODUCTION**

**1.1 Background.** Under the COMNAVFACENGCOM Fleet Mooring Maintenance (FMM) Program, CHESNAVFACENGCOM has been assigned the responsibility to plan and conduct periodic diver inspections of all fleet moorings worldwide. In carrying out this responsibility, CHESNAVFACENGCOM designated an Engineer-In-Charge (EIC) to provide inspection planning and onsite technical direction for the underwater inspection of 13 fleet moorings at NWS Seal Beach. The actual underwater portion of the inspection was performed by divers of Underwater Construction Team Two (UCT-2) which was tasked to support CHESNAVFACENGCOM. The inspection of these moorings was conducted during the period 30 August – 2 September 1982.

**1.2 General Description.** The NWS Seal Beach operates and maintains a total of 13 fleet moorings (15 buoy systems), all of which are located within the NWS Harbor Complex. Figure 1 depicts the geographic position of each of the 13 moorings. Eight, designated "Oscar 1" through "Oscar 8", are installed in the outer harbor, but inside the east and west jetties. Three of these are located to the west of the main entrance channel and five to the east of the channel. The remaining five fleet moorings are located in Anaheim Bay, the inner harbor located within two beach fill areas. Three of these are designated "Echo 1" through "Echo 3" and are installed in the southwestern portion of Anaheim Bay. The final two, which are bow/stern moorings, are designated buoy systems "Alfa 1" through "Alfa 4" and are located in the eastern portion of Anaheim Bay.

**1.3 Mooring Classifications.** Based on the original wire diameter of the chain installed, these moorings meet the requirements of either a Class B or Class C mooring system. However, in actuality, these moorings are used by NWS Seal Beach personnel as Class E and Class F moorings. Table 1 depicts both the "as-built" and usage classifications of each of these moorings.

**2.0 INSPECTION PROCEDURES**

**2.1 General.** The purpose of mooring inspections is to determine the general physical condition of the buoys and chain assemblies and, when possible, to verify or update existing as-built and maintenance records. Underwater inspections performed by divers sample only a portion of the submerged buoy hull and

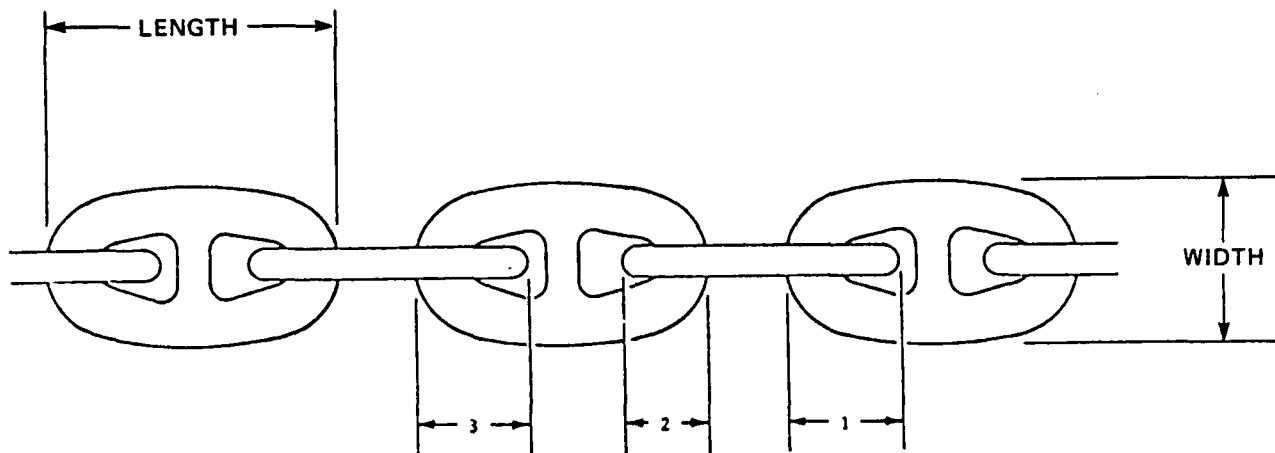


TABLE 1  
NWS SEAL BEACH MOORING CLASSIFICATIONS

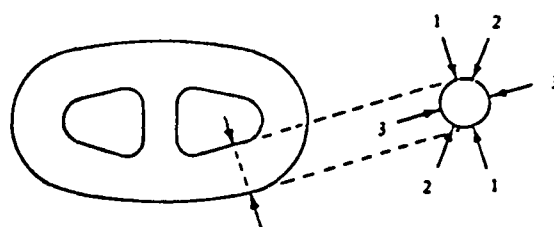
| MOORING | "AS-BUILT"<br>CLASSIFICATION | USAGE<br>CLASSIFICATION |
|---------|------------------------------|-------------------------|
| 01      | C                            | E                       |
| 02      | C                            | E                       |
| 03      | C                            | E                       |
| 04      | B                            | E                       |
| 05      | B                            | E                       |
| 06      | B                            | E                       |
| 07      | B                            | E                       |
| 08      | B                            | E                       |
| E1      | B                            | F                       |
| E2      | C                            | F                       |
| E3      | B                            | F                       |
| A-1     | B                            | E                       |
| A-2     | B                            | E                       |
| A-3     | C                            | E                       |
| A-4     | C                            | E                       |

chain assemblies in order to compile a general description of the mooring's condition. The existence of fairly consistent measurements during this "selective sampling" inspection provides a good indication of the installation's overall condition. It should be kept in mind that periodic underwater inspections are intended as an expeditious and relatively inexpensive supplement to accurate maintenance records. As such, they cannot fully substitute for a complete inspection involving recovery of the mooring and the measurement and evaluation of each component.

One of the more important parameters used to evaluate the condition of a mooring is chain wire diameter. After cleaning to bare metal, a selective sampling of the wire diameter of chain links and connecting hardware is taken in order to determine the amount of deterioration due to corrosion and wear. "Single Link" measurements are taken where chain is slack, and detect only corrosion loss. "Double Link" measurements, taken where two links connect under tension, detect the combined effects of corrosion and wear. Figure 2 shows how these measurements are made. Chain links and other components which measure 90% (+90%) or greater than the original wire diameter are considered in "good" condition; measurement



Double Link Measurement



Single Link Measurement

FIGURE 2. LOCATIONS FOR TAKING CHAIN LINK MEASUREMENTS

between 80% and 90% of original diameter is considered "fair" condition and is cause for the mooring to be downgraded to the next lowest classification; any measurement less than 80% is considered "poor" and is cause for the mooring to be declared unsatisfactory for fleet use.

Standard underwater inspection procedures do not call for the inspection of any part of the mooring which has been buried. Ground legs and risers are observed only to the point at which they become buried; no attempt is made to locate and inspect anchors or other mooring materials which are not readily visible.

## 2.2 Buoy.

2.2.1 Buoy Topside. The buoy was inspected to determine its general condition. The buoy markings were checked for conformance to those noted in applicable charts. The diameter and freeboard of the buoy were recorded. Physical damage such as holes, dents, or listing was described. The one fiberglass coated buoy was inspected for cracks, wear, peeling, or rust-bleeding. For the remaining 14 buoys, the paint was checked for cracking, chipping, and peeling. Hatches, openings, and penetrations were examined and worn material and rust were reported.

The buoy fenders and chafing rails were checked for integrity and secure connection to the buoy. Buoy top jewelry was measured with calipers to find the overall outside dimensions and areas of most severe reduction in wire size.

2.2.2 Buoy Lower Portion. Divers inspected the buoy below the waterline. The thickness of marine growth was recorded, one-foot-square areas were selected and cleared of growth without damaging the paint or fiberglass, and the condition of the paint or fiberglass was noted. Thirteen of the 15 buoy systems were cathodically protected and the condition, dimensions, and connection of anodes were noted. Then, electrical potential readings were taken with an underwater voltmeter at three locations on the buoy bottom.

2.2.3 Bottom Jewelry. On all moorings, the bottom jewelry connecting the buoy to the riser was inspected and measured with calipers if their condition indicated significant wear.

2.3 Riser. To determine chain wear, each riser chain was inspected by taking three (3) consecutive double link measurements, using precut gauges and/or calipers, at both ends and at the center of the riser. To determine original chain size, divers measured the length of a chain link and took single link caliper measurements of its wire diameter. Divers also documented the type of hardware connecting the riser chain to the ground ring.

2.4 Ground Legs. To determine chain wear, three (3) consecutive double link measurements were made at both ends and at the center of each leg until the chain was buried in the seafloor. Where a segment of chain was resting on the bottom and was not in tension, single link measurements were taken instead of double link measurements. To determine original chain size, divers measured the length of a chain link and took single link caliper measurements of its wire diameter. The hardware connecting the ground legs to the ground ring was documented. The length of chain from the ground ring to the point where the chain was buried in the mud was recorded.

2.5 Ground Ring. The ground ring was examined for general and localized wear. Caliper measurements were made of the wire size in the region of suspected wear. The depth of water at the ground ring was recorded by the divers.

2.6 Anchors.

No anchors were sighted during the course of the inspection.

2.7 Cathodic Protection System.

Thirteen of the 15 buoys were cathodically protected. There were no anodes on any risers or ground legs. An underwater voltmeter was used to check the potential of the buoy, riser, and upper end of the ground legs when visible.

3.0 INSPECTION SUMMARY

The following are the primary results of the inspection:

- Of the 15 buoy systems inspected, 11 require downgrading to the next lower classification, two were found to be in poor condition, and only two were found to be in satisfactory condition (and one of these systems contains a badly listing buoy). Table 2 presents the current status of the NWS Seal Beach fleet moorings.

- Despite the fact that the inspection revealed evidence of significant chain wear in two of these buoy systems, all are in satisfactory condition for at least limited utilization under the load constraints of a Class E or Class F mooring system.
- Although the exterior condition of buoy OSCAR SEVEN appears to be in satisfactory condition, its internal integrity is questionable since the buoy has a 25-30 degree angle of list.
- The topside padeye on buoy OSCAR THREE shows extreme wear. In addition, components of this buoy's top jewelry are also severely worn. See photograph in Appendix B.
- Underwater voltmeter readings indicate that when installed, the zinc anodes are providing adequate cathodic protection to the buoys and, in some cases, to the upper portions of their riser chains.
- The ground legs of nearly half the buoy systems (7 of 15) were completely buried in the mud and inaccessible for inspection. Five other buoy systems had less than 20 feet of ground legs exposed prior to entering the bottom. The remaining three buoy systems had between 10 and 70 feet of ground legs exposed below their ground rings.
- Two buoy systems, ECHO TWO and ALPHA TWO, were found to be in poor condition with each having ground legs measuring less than 80% of their original wire diameters.
- The lower fender is missing from three buoys, OSCAR THREE and ALPHAs TWO and THREE.

#### 4.0 COMMENTS/RECOMMENDATIONS

As a result of the evaluation of the data gathered during the inspection, the following comments/recommendations are pertinent.

- The two buoy systems found to be in poor condition, ECHO 2 and ALPHA 2, should be scheduled for removal and overhaul at the earliest practical time. Until this action can be taken, these moorings should be utilized on a limited basis only.



**TABLE 2**  
**NWS SEAL BEACH FLEET MOORING STATUS**

| Mooring Number | Current Status <sup>1</sup> |                             |                | Comments   |
|----------------|-----------------------------|-----------------------------|----------------|--|
|                | Good Condition              | Fair Condition (Down-Grade) | Poor Condition |  |
| OSCAR 1        |                             | ✓                           |                | Ground legs worn below 90%                                     |
| OSCAR 2        |                             | ✓                           |                | Riser and Ground legs worn below 90%                           |
| OSCAR 3        |                             | ✓                           |                | Ground legs worn below 90%. Severe wear top padeye and jewelry |
| OSCAR 4        |                             | ✓                           |                | Ground legs worn below 90%                                     |
| OSCAR 5        |                             | ✓                           |                | Riser and ground legs worn below 90%                           |
| OSCAR 6        |                             | ✓                           |                | Riser chain worn below 90%                                     |
| OSCAR 7        | ✓                           |                             |                | Buoy listing badly   |
| OSCAR 8        |                             | ✓                           |                | Riser chain worn below 90%                                     |
| ECHO 1         |                             | ✓                           |                | One ground leg worn below 90%                                  |
| ECHO 2         |                             |                             | ✓              | Three ground legs worn below 80%                               |
| ECHO 3         | (✓)                         | ✓                           |                | Ground ring worn below 90% <sup>2</sup>                        |
| ALPHA 1        | ✓                           |                             |                | Good condition   |
| ALPHA 2        |                             |                             | ✓              | Three ground legs worn below 80%                               |
| ALPHA 3        |                             | ✓                           |                | Riser and ground legs worn below 90%                           |
| ALPHA 4        |                             | ✓                           |                | Riser chain worn below 90%                                     |

<sup>1</sup> Based on DM-26 mooring classification requirements criteria.

<sup>2</sup> Although this mooring was initially reported to be in "good" condition, all three of its ground legs are buried and inaccessible to divers. Since the ground legs and connecting hardware of moorings ECHO 1 and ECHO 2 (which were installed at the same time as ECHO 3) were found to be in relatively poor condition, it is now assumed that the ground legs of ECHO 3 may be in a similar condition and, therefore, downgrading of this mooring must be considered.

- Buoy OSCAR SEVEN should be thoroughly inspected and checked for watertight integrity to determine the cause of its list. Once this has been determined, the cause of this deficiency should be corrected.
- The padeye on the top of OSCAR THREE should be replaced at the earliest practical time. In addition, excessively worn connecting hardware attached to this padeye should also be replaced.
- During the next scheduled overhaul, bottom fenders should be installed on buoys ALPHA TWO, ALPHA THREE and OSCAR THREE.

## APPENDIX A

### MOORING INSPECTION RESULTS

This Appendix contains, for each mooring, the underwater inspection forms (as completed by the EIC) and also the observed as-builts. The inspection results for each mooring summarizes the data obtained by the CHESNAVFACENGCOM EIC and UCT-Two divers.

## INSPECTION RESULTS

### OSCAR ONE

#### Buoy

This is a 12 foot diameter drum type buoy (S/N 119) with a 4 foot 8 inch freeboard. The top and bottom fenders are made of timber, and the two anodes attached to the buoy are in good condition. The approximate measurements of the anodes are 36" X 4" X 4". The buoy has little marine growth attached to it and shows no pitting or scaling. However, it does have some areas of slight indentations. The buoy's top and bottom hardware appear to be in satisfactory condition. In general, the buoy looks old and in need of painting. Its appearance is generally poor.

#### Riser

The original wire diameter of the installed riser chain was 2-3/4 inches which far exceeds the 1-3/4 inch diameter required for a Class E mooring. Double link measurements at the top, bottom, and middle of the riser proved to be greater than 90 percent of the original diameter. The ground ring was located at a depth of 33 feet below the surface and its wire diameter was measured to be 4-1/2 inches.

#### Ground Legs

The original wire size of each of the ground legs was 2-1/4 inches. Measurements indicate that the wire diameters are presently between 80 and 90 percent of the original wire diameters. Despite these smaller diameters, the ground legs are still larger than required for an "E" class mooring. The ground legs enter the bottom between 30 and 70 feet below the ground ring.

#### Recommendations

Due to the measured riser and ground leg chain wear, this mooring should be downgraded from a Class C to a Class D mooring. However, it is in satisfactory condition for continued utilization in its current capacity as a Class E mooring.

The buoy should be refurbished at the earliest possible time.

MOORING NO.: OSCAR 1 CLASS: E LOCATION: NWS SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_  
 WATER DEPTH: 45' 14 1/2' TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPER: NI BUOY TYPE: DEUM (12')  
 DATE: 8/30/82 (1100) ENGINEER-IN-CHARGE: M. WALTER DIVER: S. WENDT  
8/31/82 (0900) B. HUNT/S. WENDT DIVER: S. WENDT / E. PLATT

| COMPONENTS        | NI          | CONDITION           |               |     |     |               |        |     |     | UW VOLT READING | COMMENT  |
|-------------------|-------------|---------------------|---------------|-----|-----|---------------|--------|-----|-----|-----------------|--|
|                   |             | NEW FROM PARTS LIST | SINGLE LINK % |     |     | DOUBLE LINK % |        |     | D   |                 |  |
|                   |             |                     | 90+           | 80+ | 80- | 90+           | 80+    | 80- |     |                 |  |
| BUOY-TOP HARDWARE |             |                     |               |     |     |               |        |     |     |                 |  |
| RISER             | NEAR BUOY   | 2 3/4"              | 2 1/2"        |     |     |               | 5"     |     |     | - .972          | TWO ADDRES ON BUOY - 5/2E<br>36" x 4" x 4" (S/N 119) |
|                   | MIDDLE      | ↓                   |               |     |     |               | 5"     |     |     | - .700          | LINK LENGTH 16"                                      |
|                   | NEAR GRD RG | ↓                   | 2 1/2"        |     |     |               | 5"     |     |     | - .727          |  |
| GROUND RING       |             |                     |               |     |     |               |        |     |     |                 |  |
| GROUND LEG NO. 1  | UPPER END   | 2 1/4"              |               | 2"  |     |               | 4 1/4" |     | 33' | - .722          | 8' FROM BOTTOM                                       |
|                   | WEARPOINT   |                     |               | 2"  |     |               | "      | 4"  |     | - .709          | BENG 100°<br>ENTERS BOTTOM 32 LINKS<br>BELOW G.R.    |
| GROUND LEG NO. 2  | UPPER END   | ↓                   |               | 2"  |     |               | 4 1/4" |     |     | - .709          | BENG 240°<br>ENTERS BOTTOM 64 LINKS<br>BELOW G.R.    |
|                   | WEARPOINT   |                     |               | 2"  |     |               | 3 3/4" | 4"  |     |                 |  |
| GROUND LEG NO. 3  | UPPER END   | ↓                   |               | 2"  |     |               | 4"     |     |     | - .709          | BENG- 330°<br>ENTERS BOTTOM 75 LINKS<br>BELOW G.R.   |
|                   | WEARPOINT   | ↓                   |               | 2"  |     |               | "      | 4"  |     |                 |  |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility 1'-3' D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE (1) LEG 2 IN 3'-4' DEEP TRENCH HEADING TOWARD JETTY  
 (2) BUOY SHOWED MINIMUM GROWTH, PITTING, SCALING

SEAL BEACH

Buoy

"B"

Laid 9-8-75

Mooy MK I

PEG TOP

SER 137

2  $\frac{3}{4}$ " "B" + "C" LINK

2  $\frac{1}{2}$ " DETACHABLE LINK

23' 2  $\frac{1}{2}$ " C, S, CHAIN

2  $\frac{3}{4}$ " DETACHABLE LINK

2  $\frac{3}{4}$ " "B" + "C" LINK

3  $\frac{5}{8}$ " NACO

4  $\frac{1}{2}$ " x 18" GROUND RING

LEG "A" "B" + "C"

3  $\frac{5}{8}$ " NACO

2  $\frac{7}{16}$ " PEAR LINK

2  $\frac{1}{2}$ " DETACHABLE LINK

90' 2  $\frac{1}{2}$ " C/S CHAIN

2  $\frac{1}{2}$ " DETACHABLE LINK

2  $\frac{9}{16}$ " PEAR LINK

20,000# ANCHOR

OSCAR 1

THIS PARTS LIST HAS BEEN PROVIDED BY NWS SEAL BEACH FOR COMPARISON WITH DIVER INSPECTION REPORTS.

A-4

## INSPECTION RESULTS

### OSCAR TWO

#### Buoy

This is a 10 foot diameter Peg Top type buoy (S/N 137) with a 3'4" freeboard. The inspection revealed large areas of light rusting on the surface of the buoy and some minor pitting. The buoy has two rubber fenders and a chafing rail, all in good condition. It also has one attached anode. The anode's measurements are 33" x 3 1/3" x 2 3/4". The bottom of the buoy is covered with about 8" of heavy marine growth. Both the buoy's top and bottom connecting hardware are in good condition. However, two wire ropes hang over the side of the buoy from the top jewelry. In general, the buoy system is in good condition.

#### Riser

The original wire diameter of the riser chain was 2 3/4 inches, much larger than that required for a Class E mooring. Double link measurements, taken at the top, middle, and bottom of the riser chain, indicate that the chain links have been worn to within 80-90 percent of the original wire size. The ground ring was located at a depth of 42 feet, about four feet from the bottom under the tidal condition existing at the time of this inspection.

#### Ground Legs

The three ground legs, as initially installed, were comprised of 2 1/4 inch chain. Each of these legs enters the mud bottom about 20 feet below the ground ring. Double and single link measurements of the upper, visible portions of these legs were taken, and each of the legs were found to be between 80 and 90 percent of the original wire diameter. The orientation of the ground legs appears to be satisfactory.

#### Recommendation

Due to the measured riser and ground leg chain wear, this mooring should be downgraded from a Class C to a Class D mooring. However, it is in satisfactory condition for continued use in its current capacity as a Class E mooring.

MOORING NO.: OSCAR 2 CLASS: E LOCATION: NWS SEAL BEACH LONG: \_\_\_\_\_

WATER DEPTH: 46' 1/4 TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPE: NI BUOY TYPE: PEG TOP (10')

DATE: 8/31/82 ENGINEER-IN-CHARGE: M. WALTER DIVER: J. TORREUS  
(12005) H. RICHARDSON

| COMPONENTS        | NI | CONDITION              |               |        |               |     |     | UW VOLT READING | COMMENT  |
|-------------------|----|------------------------|---------------|--------|---------------|-----|-----|-----------------|--|
|                   |    | NEW FROM PREVIOUS LIST | SINGLE LINK % |        | DOUBLE LINK % |     | D   |                 |  |
| BUOY-TOP HARDWARE |    |                        | 90+           | 80+    | 80+           | 80+ |     |                 |  |
| NEAR BUOY         |    | 2 3/4"                 |               |        | 5"            |     |     | -824            | ONE ANCHOR ON BUOY - SIZE 33" x 2 3/4" x 3 1/2" (5/11 137) |
| MIDDLE            |    | ↓                      | 2 1/2"        |        | 4 3/4"        |     |     | -808            | LINK LENGTH 16"  |
| NEAR GRD RG       |    |                        |               |        | 4 3/4"        |     |     |                 |  |
| GROUND RING       |    |                        |               |        |               |     | 42' | -720            | 11' FROM BOTTOM  |
| UPPER END         |    | 2 1/4"                 |               | 2"     |               |     |     | -710            | BRNG 070°  |
| WEARPOINT         |    |                        |               |        |               |     |     |                 | ENTERS BOTTOM ~ 20' BELOW GR.                              |
| UPPER END         |    | 2 1/4"                 | 2 1/4"        |        | 4"            |     |     | -710            | BRNG 180°  |
| WEARPOINT         |    |                        |               |        |               |     |     |                 | ENTERS BOTTOM ~ 20' BELOW GR.                              |
| UPPER END         |    | 2 1/4"                 |               | 2 1/8" |               |     |     | -710            | BRNG 320°  |
| WEARPOINT         |    |                        |               |        |               |     |     |                 | ENTERS BOTTOM ~ 20' BELOW GR.                              |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility \_\_\_\_\_ D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE (1) HEAVY GROWTH (8") ON BUOY BOTTOM



OSCAR MOORING "C" 11  
 Buoy MK I PEG TOP SER 135  
 SINGLE JEWELRY WITH TENSION BAR  
 2 3/4" "B" + "C" LINK  
 2 3/4" DETACHABLE LINK  
 2 3/4" C.S. CHAIN RISER 23'  
 2 3/4" DETACHABLE LINK  
 2 3/4" "C" LINK  
 3 1/2" BENDING SHACKLE  
 4 1/2" x 15" GROUND RING

LEG "A"  
 3 1/2" BENDING SHACKLE  
 2 3/4" "C" LINK  
 2 3/4" DETACHABLE LINK  
 2 1/2" DETACHABLE LINK  
 2 1/4" C.S. CHAIN 90'  
 2 1/4" DETACHABLE LINK  
 17000# ANCHOR

LEG "B"  
 3 1/2" BENDING SHACKLE  
 2 3/4" "C" LINK  
 2 1/2" DETACHABLE LINK  
 2 1/4" DETACHABLE LINK  
 2 1/4" D.L. CHAIN 90'  
 2 1/4" DETACHABLE LINK  
 15000# ANCHOR

LEG "C"  
 3 1/2" BENDING SHACKLE  
 3 1/4" NACO  
 2 1/2" DETACHABLE LINK  
 2 1/2" C.S. CHAIN 90'  
 2 1/2" DETACHABLE LINK  
 13000# ANCHOR

OSCAR 2

THIS PARTS LIST HAS BEEN PROVIDED BY NWS SEAL BEACH FOR COMPARISON  
 WITH DIVER INSPECTION REPORTS.

A-7

## INSPECTION RESULTS

### OSCAR THREE

#### Buoy

This buoy is a 12 foot diameter painted Peg Top (S/N 141) with a freeboard of 3'6". There is very little rusting on the buoy, and its overall condition appears to be satisfactory. The buoy has a partially rotted timber top fender. There is no fender at the water line. The two anodes attached to the buoy are in almost new condition. Their approximate measurements are 34" X 3" X 2". The topside padeye and connecting links are severely worn with some components measuring less than 50 percent of their original wire diameter.

#### Riser

The riser chain measured greater than 90 percent of its original 2 3/4 inch wire diameter at its top, middle and bottom and appears to be in good condition. The ground ring was located at a depth of 40 feet.

#### Ground Legs

All three ground legs measured between 80 and 90 percent of their original 2 1/4 inch wire diameter at points just below the ground ring. The legs became buried in the mud between 10 and 75 feet from the ground ring.

#### Recommendations

Due to the extreme wear of the buoy's topside padeye and associated hardware, it is recommended that these components be replaced as soon as possible. In addition, new fenders should be installed on the buoy.

Due to the measured riser and ground leg chain wear, this mooring should be downgraded from a Class C to a Class D mooring. However, it is in satisfactory condition for continued utilization in its current capacity as a Class E mooring.

MOORING NO.: OSM 3 CLASS: E LOCATION: NWS SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_

WATER DEPTH: 45' / 41.5' TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPE: NI BUOY TYPE: REG TOP (12')

DATE: 8/31/82 ENGINEER-IN-CHARGE: M. WALTER DIVER: B. HUET  
(1315) J. ELSASSER

| COMPONENTS        | NI          | CONDITION              |               |     |     |               |     |     | UW VOLT READING | COMMENT |  |
|-------------------|-------------|------------------------|---------------|-----|-----|---------------|-----|-----|-----------------|---------|--|
|                   |             | NEW FROM PREVIOUS LIST | SINGLE LINK % |     |     | DOUBLE LINK % |     |     |                 |         |  |
|                   |             |                        | 90+           | 80+ | 80- | 90+           | 80+ | 80- |                 |         |  |
| BUOY TOP HARDWARE |             |                        |               |     |     |               |     |     |                 |         |  |
| RISER             | NEAR BUOY   |                        |               |     |     |               |     |     |                 |         |  |
|                   | MIDDLE      |                        |               |     |     |               |     |     |                 |         |  |
|                   | NEAR GRD RG |                        |               |     |     |               |     |     |                 |         |  |
| GROUND RING       |             |                        |               |     |     |               |     |     |                 |         |  |
| GROUND LEG NO. 1  | UPPER END   |                        |               |     |     |               |     |     |                 |         |  |
|                   | WEARPOINT   |                        |               |     |     |               |     |     |                 |         |  |
| GROUND LEG NO. 2  | UPPER END   |                        |               |     |     |               |     |     |                 |         |  |
|                   | WEARPOINT   |                        |               |     |     |               |     |     |                 |         |  |
| GROUND LEG NO. 3  | UPPER END   |                        |               |     |     |               |     |     |                 |         |  |
|                   | WEARPOINT   |                        |               |     |     |               |     |     |                 |         |  |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility \_\_\_\_\_ D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE: ATTENTION FOR A FOURTH LEG NOTED ON GROUND RING

OSCAR MOORING "E"  
 Buoy MK I PEG Top SER. 41  
 DOUBLE JEWELRY WITH TESTING BAR  
 3" DETACHABLE LINK  
 2 9/16" PEARLINK  
 2 3/4" DETACHABLE LINK  
 2 3/4" C.S. CHAIN RISER — FT  
 2 3/4" DETACHABLE LINK  
 2 3/4" "B+C" LINK  
 3 5/8" NACO  
 5" x 18" GROUND RING (EXTRA NACO + PEAR

LEG "A" "B" + "C"  
 3 5/8" NACO  
 2 9/16" PEARLINK  
 2 1/4" DETACHABLE LINK  
 2 1/4" D.L. CHAIN 90'  
 2 1/4" DETACHABLE LINK  
 16000 # ANCHOR LEG "A"  
 13000 # ANCHOR LEG "B"  
 12000 # ANCHOR LEG "C"

CHESNAVFACEGCOM REPORT FPO-1-82(30), "NWS SEAL BEACH FLEET MOORINGS INSPECTION REPORT," DECEMBER 1982

# OSCAR 3

|         |            |          |               |
|---------|------------|----------|---------------|
| 12000 # | 91' CHAIN  | DL 2 1/4 | RISER 5 NACOS |
| 13000 # | 101' CHAIN | DL 2 1/4 | 5" x 18"      |
| 16000 # | 92' CHAIN  | DL 2 1/4 |               |

THIS PARTS LIST HAS BEEN PROVIDED BY  
NWS SEAL BEACH FOR COMPARISON WITH  
DIVER INSPECTION REPORTS.

## INSPECTION RESULTS

### OSCAR FOUR

#### Buoy

This 10 foot diameter, painted Peg Top buoy (S/N 41) is in good condition and has a 3' 4" freeboard. The buoy has two rubber fenders and a rubber chafing rail on the top deck. There was a lighter moored to the buoy at the time of the inspection. There are two anodes attached to the buoy. Their measurements are 34" x 3" x 4" and 35" x 3" x 3".

Some of the topside chain jewelry is badly worn, but accurate measurement of these components was not possible due to buoy motion induced by wave/wind action.

#### Riser

The riser chain measured greater than 90 percent of its original 2 1/2 inch wire diameter and is in good condition. The ground ring was located at a depth of 40 feet, very close to the bottom. Although its wire diameter was not measured, the ring's very clean condition indicates that it is undergoing some abrasive wear from bottom materials.

#### Ground Legs

The three ground legs all measured between 80 and 90 percent of their original 2 1/2 inch wire diameter at points near the ground ring. All legs were buried in mud between 40 and 70 feet below the ground ring.

#### Recommendations

Due to the measured ground leg chain wear, this mooring should be downgraded from a Class B to a Class C mooring. However, it is in satisfactory condition for continued utilization in its current capacity as a Class E mooring. The topside chain jewelry should be reinspected in order to accurately determine the extent of wear and to identify which components, if any, should be replaced. The inspection and evaluation of this jewelry is well within the capability of station personnel.

MOORING NO.: OSCAR 11 CLASS: E LOCATION: NWS Seal Beach LAT: \_\_\_\_\_ LONG: \_\_\_\_\_

WATER DEPTH: 95' 1/4 TYPE MOORING: ☒ RISER ☐ TELEPHONE \_\_\_\_\_ ANCHOR SIZE/TY: AJ BUOY TYPE: REG TOP (10')

DATE: 8/31/82 ENGINEER-IN CHARGE: M. WALTER DIVER: B. HURT  
(1645) J. ELSA

| COMPONENTS             | NI        | CONDITION                |               |        |        |               |        |     |   | UW VOLT<br>READING | COMMENT |  |
|------------------------|-----------|--------------------------|---------------|--------|--------|---------------|--------|-----|---|--------------------|---------|--|
|                        |           | NEW<br>FROM<br>PART LIST | SINGLE LINK % |        |        | DOUBLE LINK % |        |     | D |                    |         |  |
|                        |           |                          | 90+           | 80+    | 80-    | 90+           | 80+    | 80- |   |                    |         |  |
| BUOY TOP HARDWARE      |           |                          |               |        |        |               |        |     |   |                    |         | TWO ANODES ON BUOY - SIZES<br>34" x 3" x 4" AND 35" x 3" x 3" (S/N 41) |
|                        | NEAR BUOY |                          | 2 1/2"        | 2 1/4" |        |               | 4 1/2" |     |   |                    |         | LINK LENGTH 16"  |
|                        | MIDDLE    |                          |               |        |        |               |        |     |   |                    |         |  |
| NEAR GRD RG            |           |                          |               |        |        |               | 4 3/4" |     |   |                    |         |  |
| GROUND RING            |           |                          |               |        |        |               |        |     |   |                    |         |  |
| GROUND<br>LEG<br>NO. 1 | UPPER END |                          | 2 1/2"        | 2 1/4" |        |               |        |     |   | 40'                |         | BRNG. 000° LINK LENGTH 14"   |
| WEARPOINT              |           |                          |               |        |        |               |        |     |   |                    |         | ENTERS BOTTOM ~ 60'<br>BELOW G.R.                                      |
| GROUND<br>LEG<br>NO. 2 | UPPER END |                          | 2 1/2"        |        | 2 1/8" |               |        |     |   |                    |         | BRNG. 130°   |
| WEARPOINT              |           |                          |               |        |        |               |        |     |   |                    |         | ENTERS BOTTOM ~ 40'<br>BELOW G.R.                                      |
| GROUND<br>LEG<br>NO. 3 | UPPER END |                          | 2 1/2"        |        | 2 1/8" |               |        |     |   |                    |         | BRNG. 350°   |
| WEARPOINT              |           |                          |               |        |        |               |        |     |   |                    |         | ENTERS BOTTOM ~ 70'<br>BELOW G.R.                                      |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility 0 D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE (1) GROUND LEG ENTRY POINTS INTO BOTTOM ESTIMATED BY DIVERS DUE TO  
 (2) ALTHOUGH LEGS WERE DIFFICULT DUE TO HIGH WIND AND WAVES.  
 BEING VISIBILITY AND SOFT SILTY MUD.

SEAL BEACH  
BUOY "G" LAID 9-6-75  
BUOY MK I PEG TOP SER 138  
3" DETACHABLE LINK  
2 9/16" PEAR LINK  
2 1/2" DETACHABLE LINK  
29' 2 1/2" C.S. RISER  
2 3/4" "B+C" LINK  
3 5/8" NACO  
5" x 15" GROUND RING

LEG "A" + "B"  
3 5/8" NACO  
2 9/16" PEAR LINK  
2 1/2" DETACHABLE LINK  
90' 2 1/2" C.S. CHAIN  
2 1/2" DETACHABLE LINK  
2 9/16" PEAR LINK  
20000 LB ANCHOR

LEG "C" SAME AS "A" + "B"  
EXCEPT FOR 13000 ANCHOR

OSCAR 4

THIS PARTS LIST HAS BEEN PROVIDED BY NWS SEAL BEACH FOR COMPARISON  
WITH DIVER INSPECTION REPORTS.

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## INSPECTION RESULTS

### OSCAR FIVE

#### Buoy

This buoy is a 10 foot diameter Peg Top with a 3'6" freeboard. The top is completely covered with guano; the chafing rail and both fenders are made of timber. The buoy is covered with very heavy marine growth below the water line. Two anodes are attached to the buoy and their approximate sizes are 35" x 4" x 3". The buoy and its top and bottom hardware appear to be in good condition.

#### Riser

The riser was measured to be between 80 and 90 percent of the original wire diameter of 2 1/2 inches and is in fair condition. Two wire ropes are wrapped around the riser chain. The ground ring was located at a depth of 31 feet, about six feet above the bottom.

#### Ground Legs

All three ground legs enter the mud about five feet below the ground ring. The upper visible end of each ground leg was covered with heavy growth but measured between 80 and 90 percent of original (2 1/2") wire diameter.

#### Recommendations

Due to the measured riser and ground leg chain wear, this mooring should be downgraded from a Class B to a Class C mooring. However, it is in satisfactory condition for continued utilization in its current capacity as a Class E mooring.



MOORING NO.: OSCAR 5 CLASS: E LOCATION: NWS SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_  
 WATER DEPTH: 37' / 34' TYPE MOORING: ☒ RISER ☐ TELEPHONE \_\_\_\_\_ ANCHOR SIZE/TYP: NI BUOY TYPE: Pix Top (60')  
 DATE: 8/31/82 ENGINEER-IN-CHARGE: M. WALTER DIVER: M. RICHARDSON 5. WENDT  
(1845)

| COMPONENTS        | NI | CONDITION |               |     |        |               | U/W VOLT READING | COMMENT   |
|-------------------|----|-----------|---------------|-----|--------|---------------|------------------|---|
|                   |    | NEW FLOW  | SINGLE LINK % |     |        | DOUBLE LINK % |                  |   |
|                   |    |           | 90+           | 80+ | 80-    | 90+           | 80+              | 80-   |
| BUOY-TOP HARDWARE |    |           |               |     |        |               |                  |   |
| NEAR BUOY         |    | 2 1/2"    | 2 1/2"        |     |        | 4 1/4"        |                  | TWO RINGS ON BUOY - SIZE 35" x 4" x 3"                    |
| MIDDLE            |    | ↓         |               |     |        |               |                  | LINK LENGTH 14"   |
| NEAR GRD RG       |    | 2 1/4"    |               |     | 4 1/2" |               |                  |   |
| GROUND RING       |    |           |               |     |        |               |                  |   |
| GROUND LEG NO. 1  |    | 2 1/2"    |               | 2"  |        | 4 1/4"        | 31'              | BENG 090° - LINK LENGTH 14" ENTERS BOTTOM ~ 5' BELOW G.R. |
| WEARPOINT         |    |           |               |     |        |               |                  |   |
| GROUND LEG NO. 2  |    | 2 1/2"    |               | 2"  |        | 4 1/4"        |                  | BENG 310° ENTERS BOTTOM ~ 5' BELOW G.R.                   |
| WEARPOINT         |    |           |               |     |        |               |                  |   |
| GROUND LEG NO. 3  |    | 2 1/2"    |               | 2"  |        | 4 1/4"        |                  | BENG 300° ENTERS BOTTOM ~ 5' BELOW G.R.                   |
| WEARPOINT         |    |           |               |     |        |               |                  |   |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK  
 Visibility \_\_\_\_\_ D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE (1) HEAVY MARINE GROWTH ON BUOY BOTTOM. BUOY TOP COVERED WITH GUMNO.

# OSCAR MOORING "D"

BUOY DRUM 12' DIA SER 140  
SINGLE JEWELRY RUBBING CASTING  
2 LINKS 2 1/2" C.S. BELOW RUBBING CASTING  
2 1/2" DETACHABLE LINK  
2 1/2" C.S. CHAIN RISER 18'  
2 3/4" "C" LINK  
3 5/8" NACO  
5" x 18" GROUND RING

## LEG "A" "B" "C"

3 5/8" NACO  
2 9/16" PEAR  
2 1/2" DETACHABLE LINK  
2 1/2" C.S. CHAIN 90'  
2 1/2" DETACHABLE LINK  
17000# ANCHOR LEG "A"  
14000# " " LEG "B" TO BREAK WATER  
15000# " " LEG "C"

OSCAR 5

THIS PARTS LIST HAS BEEN PROVIDED BY NWS SEAL BEACH FOR COMPARISON  
WITH DIVER INSPECTION REPORTS.

## INSPECTION RESULTS

### OSCAR SIX

#### Buoy

This is a 10 foot diameter Peg Top buoy with a 3'7" freeboard. The chafing rail and both fenders are made of rubber. The paint is in very good condition with only small patches of light rust on the buoy top and above water sides. Both top and bottom hardware are in satisfactory condition, and the buoy is cathodically protected with two anodes, each of which measures 35" X 4" X 3". The bottom of the buoy is covered with heavy marine growth. The buoy is in good condition but is reportedly not often used due to the relatively shallow water in which it is installed. Both top and bottom hardware are in good condition.

#### Riser

The riser chain measures between 80 and 90 percent of its original wire diameter (2 1/2") and is covered with heavy growth. The diameter of the ground ring is four and a half inches, and the ring is partially buried in the bottom.

#### Ground Legs

None of the three ground legs were visible, and it is assumed that they are buried below the ground ring.

#### Recommendations

Due to the measured riser chain wear and unknown condition of the ground legs, this mooring should be downgraded from a Class B to a Class C mooring. However, it is in satisfactory condition for continued utilization in its current capacity as a Class E mooring.

MOORING NO.: OSCAR 6 CLASS: E LOCATION: NWS SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_  
 WATER DEPTH: 22' 20" TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPE: NI BUOY TYPE: REG TOP (10')  
 DATE: 8/31/82 ENGINEER-IN-CHARGE: M. WALTER DIVER: S. WENDT  
(1300) H. RICHARDSON

| COMPONENTS        | NI | CONDITION          |               |     |               |     |     | UW VOLT READING | COMMENT                                 |
|-------------------|----|--------------------|---------------|-----|---------------|-----|-----|-----------------|---|
|                   |    | NEW FROM PARTS LOT | SINGLE LINK % |     | DOUBLE LINK % |     | D   |                 |   |
|                   |    |                    | 90+           | 80+ | 80+           | 90+ | 80+ |                 |   |
| BUOY TOP HARDWARE |    |                    |               |     |               |     |     |                 |   |
| NEAR BUOY         |    | 2 1/2"             | 2 1/2"        |     | 4 1/4"        |     |     | -990            | TWO ANODES ON BUOY - SIZE 35" X 4" X 3" |
| MIDDLE            |    |                    |               |     |               |     |     |                 | LINK LENGTH 14"                         |
| NEAR GRD RG       |    | ↓                  | 2 1/4"        |     | 4 1/2"        |     |     | -980            | NO GROWTH ON CHAIN WITHIN 6" OF BOTTOM  |
| GROUND RING       |    |                    | 4 1/2"        |     |               |     |     | -740            | HALF BURIED IN THE BOTTOM               |
| GROUND LEG NO. 1  |    | 2 1/2"             |               |     |               |     |     |                 | BURIED                                  |
| WEARPOINT         |    |                    |               |     |               |     |     |                 |   |
| GROUND LEG NO. 2  |    |                    |               |     |               |     |     |                 | BURIED                                  |
| WEARPOINT         |    |                    |               |     |               |     |     |                 |   |
| GROUND LEG NO. 3  |    |                    |               |     |               |     |     |                 | BURIED                                  |
| WEARPOINT         |    | ↓                  |               |     |               |     |     |                 |   |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility \_\_\_\_\_ D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE (1) HEAVY MARINE GROWTH ON BUOY BOTTOM.  
 (2) CHAIN CLEAN BELOW SIX FEET ABOVE BOTTOM.

OSCAR MOORING "F"  
 BUOY DRUM 12' dia SEP 146  
 DOUBLE JEWELRY WITH TENSION BAR  
 2 $\frac{3}{4}$ " DETACHABLE LINK  
 2 $\frac{9}{16}$ " PEAR LINK  
 2 $\frac{1}{2}$ " DETACHABLE LINK  
 2 $\frac{1}{2}$ " C.S. CHAIN RISER 20'  
 2 $\frac{1}{2}$ " DETACHABLE LINK  
 2 $\frac{3}{4}$ " "C" LINK  
 3 $\frac{5}{8}$ " NACO  
 5" X 18" GROUND RING  
 LEG "A" "B" & "C"  
 3 $\frac{5}{8}$ " NACO  
 2 $\frac{9}{16}$ " PEAR LINK  
 2 $\frac{1}{2}$ " DETACHABLE LINK  
 2 $\frac{1}{2}$ " C.S. CHAIN 90'  
 2 $\frac{1}{2}$ " DETACHABLE LINK  
 15000# ANCHOR LEG "A"  
 11000# " LEG "B" TO BREAK WATER  
 13000# " LEG "C"

# OSCAR 6

THIS PARTS LIST HAS BEEN PROVIDED BY NWS SEAL BEACH FOR COMPARISON  
 WITH DIVER INSPECTION REPORTS.

## INSPECTION RESULTS

### OSCAR SEVEN

#### Buoy

This is a Peg Top buoy whose exterior is in satisfactory condition. However, the buoy has a large angle of list, and due to the amount of growth on its upper side, this buoy has obviously been listing for a considerable period of time. The divers attempted to open the hatches to check for water inside the buoy but were unable to do so. No holes or dents that could have contributed to the list were noted in the buoy's hull. The buoy has two anodes attached to it with mounting brackets, and both top and bottom jewelry are in satisfactory condition. The buoy has two rubber fenders and chafing rail.

#### Riser

A new riser chain was installed in 1980, and divers measured this chain to be greater than 90 percent of the installed 2 1/2" wire diameter. The ground ring is partially buried in the mud bottom at a depth of 46 feet.

#### Ground Legs

The ground legs are not visible and are assumed to be buried beneath the ground ring. Their orientation could not be determined.

#### Recommendations

This mooring appears to be in satisfactory condition for continued designation as a Class B mooring. However, due to the unknown condition of the ground legs, the holding capacity of this mooring cannot be estimated. *The buoy's list should be investigated as soon as possible and the cause of this list corrected.*

MOORING NO. OSAR 7 CLASS: E LOCATION: NWS SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_

WATER DEPTH: 50' / 46.5' TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPER: NI BUOY TYPE: PEG TOP

DATE: 8/31/82 ENGINEER-IN-CHARGE: H. WALT DIVER: J. TORRES

| COMPONENTS             | NI          | CONDITION           |               |     |               |     |   | UW VOLT<br>READING | COMMENT  |
|------------------------|-------------|---------------------|---------------|-----|---------------|-----|---|--------------------|--|
|                        |             | NEW<br>FEET<br>LIST | SINGLE LINK % |     | DOUBLE LINK % |     | D |                    |  |
|                        |             |                     | 90+           | 80+ | 80-           | 90+ |   |                    |  |
| BUOY-TOP HARDWARE      |             |                     |               |     |               |     |   |                    |  |
| RISER                  | NEAR BUOY   |                     |               |     |               |     |   | -1.027             | BUOY LISTING- BADLY -TOP FENDER<br>ONLY ONE FOOT ABOVE WATER SURFACE |
|                        | MIDDLE      |                     |               |     |               |     |   | - .870             | LINK LENGTH 14 "   |
|                        | NEAR GRD RG |                     |               |     |               |     |   | - .740             | PARTIALLY BURIED IN<br>BOTTOM  |
| GROUND RING            |             |                     |               |     |               |     |   |                    |  |
| GROUND<br>LEG<br>NO. 1 | UPPER END   |                     |               |     |               |     |   |                    | BURIED   |
|                        | WEARPOINT   |                     |               |     |               |     |   |                    |  |
| GROUND<br>LEG<br>NO. 2 | UPPER END   |                     |               |     |               |     |   |                    | BURIED   |
|                        | WEARPOINT   |                     |               |     |               |     |   |                    |  |
| GROUND<br>LEG<br>NO. 3 | UPPER END   |                     |               |     |               |     |   |                    | BURIED   |
|                        | WEARPOINT   |                     |               |     |               |     |   |                    |  |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility \_\_\_\_\_ D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE: (1) NEW RISEE CHAIN (2 1/2") INSTALLED IN 1980 BY CIVILIAN CONTRACTOR (PETERSEN CO)

# SEAL BEACH

BUOY "H" LAID 9-9-75

MKI PEG TOP SER 17

2 1/2" DETACHABLE LINK

2 9/16" PEAR LINK

2 1/2" DETACHABLE LINK

5' C. S. CHAIN RISER

2 1/2" DETACHABLE LINK

2 3/4" "B" + "C" LINK

3 5/8" NACO

4 1/2" x 16" GROUND RING

## LEG "A"

3 5/8" NACO

2 9/16" PEAR LINK

2 1/2" DETACHABLE LINK

90' 2 1/4" D/L CHAIN

2 1/2" DETACHABLE LINK

2 9/16" PEAR LINK

17000# ANCHOR

## LEG "B"

3" AJ LINK

2 9/16" PEAR LINK

2 1/2" DETACHABLE LINK

90' 2 1/2" C/S CHAIN

2 1/2" DETACHABLE LINK

2 9/16" PEAR LINK

20000# ANCHOR

## LEG "C"

3 5/8" NACO

2 9/16" PEAR LINK

2 1/2" DETACHABLE LINK

90' 2 1/2" ETL LINK

2 1/2" DETACHABLE LINK

2 9/16" PEAR LINK

13000# ANCHOR

OSCAR 7

THIS PARTS LIST HAS BEEN PROVIDED BY  
NWS SEAL BEACH FOR COMPARISON WITH  
DIVER INSPECTION REPORTS.



## INSPECTION RESULTS

### OSCAR EIGHT

#### Buoy

This is a Peg Top type buoy (S/N 135) with a painted surface. Some slight rust bleeding was noted, and some minor pitting on the buoy's sides was observed. The chafing rail and both fenders are made of rubber. The buoy is cathodically protected with two 32 1/2" x 2 3/4" x 3 1/2" anodes. Its hull is covered with 6 - 8 inches of marine growth. The padeye on the top shows evidence of side wear. Although painted white instead of the standard black, the buoy's hull shows no signs of pitting or chipping and no dents were noted.

#### Riser

The riser chain was measured to be greater than 80 percent but less than 90 percent of the original (2 1/2") wire diameter. The lower end of the riser disappears into the bottom. The ground ring was assumed to be buried in the mud below the riser.

#### Ground Legs

Buried — not inspected.

#### Conclusions/Recommendations

The padeye on the top of the buoy should be replaced as soon as practical. During the next buoy refurbishment, a standard black paint should be applied to its hull.

Due to the measured riser chain wear, this mooring should be downgraded from a Class B to a Class C mooring. However, it is in satisfactory condition for continued utilization in its current capacity as a Class E mooring. Due to the buried ground legs, the holding capacity of this mooring cannot be estimated.

MOORING NO: OSCAR 8 CLASS: E LOCATION: NWS GAL PERMANENT LONG: \_\_\_\_\_

WATER DEPTH: 56' / 51' TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPE: NI BUOY TYPE: P&B

DATE: 8/20/82 ENGINEER-IN-CHARGE: M. WALTER DIVER: J. TORRELLAS  
(1030)

| COMPONENTS                    | NI          | CONDITION               |               |     |               |     |     | UW VOLT<br>READING | COMMENT   |
|-------------------------------|-------------|-------------------------|---------------|-----|---------------|-----|-----|--------------------|---|
|                               |             | NEW<br>FROM<br>PREVIOUS | SINGLE LINK % |     | DOUBLE LINK % |     | D   |                    |   |
|                               |             |                         | 90+           | 80+ | 90+           | 80+ | 80- |                    |   |
| BUOY TOP HARDWARE             |             |                         |               |     |               |     |     |                    |   |
| RISER                         | NEAR BUOY   | 2 1/2"                  |               |     | 4 3/4"        |     |     | -920/904           | TWO ANODES ON BUOY - SIZE<br>3 1/2" x 2 3/4" x 3 1/2" (S/N 135) |
|                               | MIDDLE      | ↓                       |               |     |               |     |     | -910/846           | LINK LENGTH 15"   |
|                               | NEAR GRD RG | 2 1/2"                  |               |     |               |     |     | -900/905           |   |
| GROUND RING                   |             |                         |               |     |               |     |     |                    |   |
| GROUND<br>LEG<br>NO. <u>1</u> | UPPER END   |                         |               |     |               |     |     |                    | BURIED  |
|                               | WEARPOINT   |                         |               |     |               |     |     |                    | BURIED  |
| GROUND<br>LEG<br>NO. <u>2</u> | UPPER END   |                         |               |     |               |     |     |                    | BURIED  |
|                               | WEARPOINT   |                         |               |     |               |     |     |                    | BURIED  |
| GROUND<br>LEG<br>NO. <u>3</u> | UPPER END   |                         |               |     |               |     |     |                    | BURIED  |
|                               | WEARPOINT   |                         |               |     |               |     |     |                    | BURIED  |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility 0-1' D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE (1) HEAVY MARINE GROWTH (6"-8") ON BUOY BOTTOM  
(2) VOLUNTARY REEDINGS - FIRST BY RUSTREADER, SECOND BY  
CORRECTION INSTRUMENTS

SEAL BEACH 08

BUOY "A" LAID 9-7-75

BUOY MK I PEGTOP SER 16

3 1/4" "C" LINK

2 1/4" "A" LINK C.S.

2 1/2" DETACHABLE LINK

31' 2 1/2" C.S. RISER

2 3/4" DETACHABLE LINK

11' 2 3/4" C.S. RISER

2 3/4" DETACHABLE LINK.

2 3/4" "B" + "C" LINK

3 5/8" NACO

5" x 15" GROUND RING

LEG "A" + "C"

3 5/8" NACO

2 9/16" PEAR LINK

2 1/2" DETACHABLE

90' 2 1/2" C.S. CHAIN

2 1/2" DETACHABLE LINK

20000# ANCHOR

LEG "B"

SAME AS "A" + "C"

EXCEPT 2 1/2 D/L

OSCAR 8

THIS PARTS LIST HAS BEEN PROVIDED BY NWS SEAL BEACH FOR COMPARISON  
WITH DIVER INSPECTION REPORTS.

A-25

## INSPECTION RESULTS

### ECHO ONE

#### Buoy

This 10 foot diameter, painted Peg Top buoy (S/N 22) is in satisfactory condition. The buoy has two wooden fenders and a wooden chafing rail; the fender bolts are heavily rusted. A good deal of rust was also observed on the four topside hatches and on the rivets around the buoy. Except for rust, the buoy surface was reported to be very clean. The single zinc anode, measuring 34" x 3 3/4" x 3 1/2", has a crusty appearance; there is 6 - 8" of marine growth below the waterline. The freeboard was reported as 3'6"; there were four lighters moored at the time of the inspection. The top jewelry is in good condition, but the bottom jewelry is worn to within 80 and 90 percent of original wire diameter.

#### Riser

The riser chain measured greater than 90 percent of the original 2-3/4 inch wire diameter and is in good condition. However, double link measurements of the connecting components near the ground ring are worn to less than 80 percent of original wire diameter. The ground ring was found to be nearly completely buried in bottom mud at a depth of 39 feet. The ring measured greater than 90 percent of its original 4 1/2 inch wire diameter.

#### Ground Legs

The ground legs are buried at the ground ring. However, measurement of the ground leg-to-ground ring connecting hardware revealed that some components had worn to less than 80 percent of original wire diameter and that others were between 80 and 90 percent.

#### Conclusions/Recommendations

Normal procedures call for a mooring to be downgraded one classification whenever a measurement between 80 and 90 percent of original wire diameter is recorded. A measurement of less than 80 percent in any component is cause for a mooring to be removed from service until an overhaul is performed; there is no precedent for downgrading a mooring twice based on a <80% reading. However, in the case of mooring Echo One, downgrading by two classifications would still allow the F Class mooring loads required by NAVWPNSTA Seal Beach. Therefore, it is recommended that use of this mooring be limited, whenever possible, and that it never be subjected to loads in excess of F Class loads limits defined in NAVFACENGCOM Design Manual DM-26.

MOORING NO.: ECHO 1 CLASS: F LOCATION: NWS SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_  
 WATER DEPTH: 40' / 32' TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TY: NI BUOY TYPE: LEG TOP (10')  
 DATE: 9/1/82 ENGINEER-IN CHARGE: M. WALTER DIVER: J. WRIGHT  
 (1330)

| COMPONENTS        | NI          | CONDITION |               |     |     |               |     |     | UW VOLT READING | COMMENT |   |
|-------------------|-------------|-----------|---------------|-----|-----|---------------|-----|-----|-----------------|---------|---|
|                   |             | NEW FROM  | SINGLE LINK % |     |     | DOUBLE LINK % |     |     |                 |         |   |
|                   |             |           | 90+           | 80+ | 80- | 90+           | 80+ | 80- |                 |         |   |
| BUOY TOP HARDWARE |             |           |               |     |     |               |     |     |                 |         |   |
| RISER             | NEAR BUOY   | 2 3/4"    | 2 1/2"        |     |     |               |     | 5"  |                 | - .810  | ONE ANODE ON BUOY - SIZE 3 3/4" X 3 1/2" (5/16 22)<br>LINK LENGTH 16" |
|                   | MIDDLE      | ↓         |               |     |     |               |     |     |                 | - .882  |   |
|                   | NEAR GRD RG | ↓         | 2 1/2"        |     |     |               |     |     |                 |         |   |
| GROUND RING       |             |           |               |     |     |               |     |     |                 |         |   |
| GROUND LEG NO. 1  | UPPER END   | 4 1/2"    | 4 1/2"        |     |     |               |     |     | 39'             | - .830  | PARTIALLY BURIED  |
|                   | WEARPOINT   | 2 1/2"    | 2 1/2"        |     |     |               |     | 5"  |                 | - .820  | BRNG 000°   |
| GROUND LEG NO. 2  | UPPER END   | 2 1/2"    | 2 1/2"        |     |     |               |     |     | 4"              | - .825  | BRNG 090° LINK LENGTH 15 1/2"   |
|                   | WEARPOINT   |           |               |     |     |               |     |     |                 |         |   |
| GROUND LEG NO. 3  | UPPER END   | 2 1/2"    | 2 1/2"        |     |     |               |     | 5"  |                 | - .822  | BRNG 270°   |
|                   | WEARPOINT   |           |               |     |     |               |     |     |                 |         |   |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

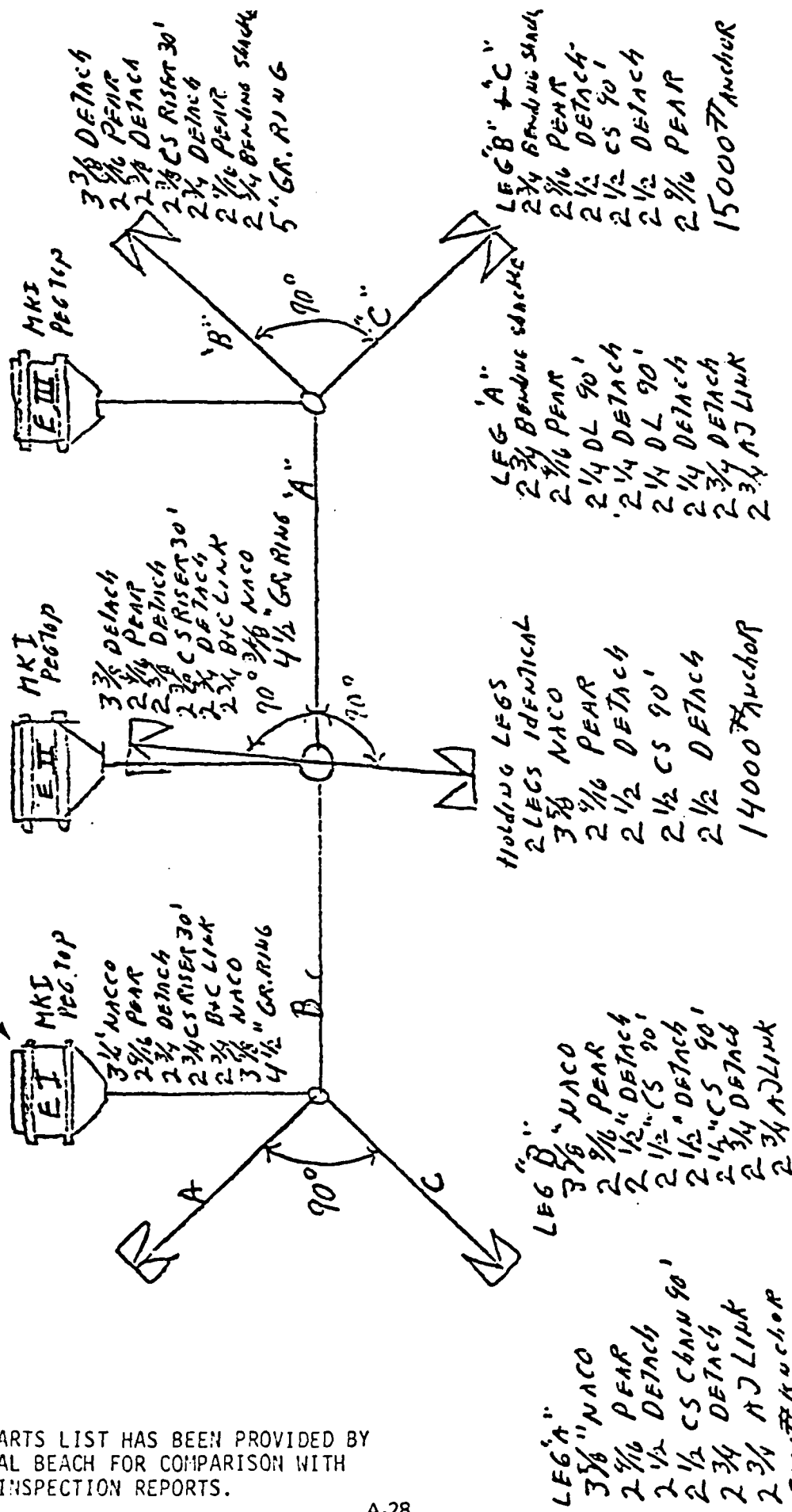
Visibility \_\_\_\_\_ D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

- NOTE (1) BUOY TOP SURFACE CLEAN. RUST ON ATTACHES.  
 (2) BUOY BOTTOM SEWERLY IS WORN TO WITHIN 80 AND 90 PERCENT OF ORIGINAL WIRE DIAMETER.  
 (3) HARDWARE CONNECTING THE RISER AND GROUND LEGS TO THE GROUND RING IS WORN TO LESS THAN 80 PERCENT OF ORIGINAL WIRE DIAMETER.

# SEAL BEACH ECHO MOORING-ARRAY

Laid 5-23-74



THIS PARTS LIST HAS BEEN PROVIDED BY  
NWS SEAL BEACH FOR COMPARISON WITH  
DIVER INSPECTION REPORTS.

## INSPECTION RESULTS ECHO TWO

### Buoy

The buoy, a 10 foot diameter painted Peg Top (S/N 138), is in good condition. The surface of the buoy is clean with some rust on hatch-cover bolts. There are two rubber fenders and a chafing rail attached. A single zinc anode, measuring 35" x 3" x 3 1/2", is coated with about 1/8 inch of residue. The buoy was heeled over under the load of seven lighters at the time of the inspection, with the freeboard recorded as 3'5".

The topside hardware has been painted but is now rusty and showing signs of wear. The pin in the large shackle appeared worn but was inaccessible for inspection.

### Riser

The riser chain measured between 80 and 90 percent of original 2 3/4 inch wire diameter. The ground ring is at a depth of 38 feet and measured greater than 90 percent of original wire diameter.

### Ground Legs

The ground legs are in poor condition. Three of the four ground legs measured less than 80 percent of original wire diameter; the fourth was between 80 and 90 percent. Two of the legs are buried in the mud immediately below the ground ring; the upper end of these legs are badly worn, with shiny links reported in one leg.

### Conclusions/Recommendations

Normal procedures call for a mooring to be downgraded one classification whenever a measurement between 80 and 90 percent of original wire diameter is recorded. A measurement of less than 80 percent in any component is cause for a mooring to be removed from service until an overhaul is performed; there is no precedent for downgrading a mooring twice based on a <80% reading. However, in the case of mooring Echo Two, downgrading by two classifications would still allow the F class mooring loads required by NAVWPNSTA Seal Beach. Therefore, it is recommended that use of this mooring be limited, whenever possible, and that it never be subjected to loads in excess of F class loads limits defined in NAVFACENG-COM Design Manual DM-26.

MOORING NO.: FC110 2 CLASS: F LOCATION: NWS SEAL BEACH, LAT: LONG:

WATER DEPTH: 40' 38" TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYP: NI BUOY TYPE: REG TOP (10')

DATE: 9/1/82 ENGINEER-IN-CHARGE: M. WALTER DIVER: K. PLATT  
(1530)

| COMPONENTS        | NI | CONDITION         |               |     |               |        |        | UW VOLT<br>READING | COMMENT   |
|-------------------|----|-------------------|---------------|-----|---------------|--------|--------|--------------------|---|
|                   |    | NEW FROM APPENDIX | SINGLE LINK % |     | DOUBLE LINK % |        | D      |                    |   |
|                   |    |                   | 90+           | 80- | 90+           | 80+    | 80-    |                    |   |
| BUOY TOP HARDWARE |    |                   |               |     |               |        |        |                    |   |
| NEAR BUOY         |    | 3/4"              | 2 1/2"        |     |               | 4 1/2" |        | - .935             | ONE ANODE ON BUOY - SIZE 35" x 3" x 3 1/2" (SN 138) |
| MIDDLE            |    | ↓                 | 2 1/2"        |     |               | 4 3/4" |        | - .925             | LINK LENGTH 16"                                     |
| NEAR GRD RG       |    | 4 1/2"            | 2 1/2"        |     |               |        |        | - .702             |   |
| GROUND RING       |    |                   |               |     |               |        |        |                    |   |
| UPPER END         |    | 2 1/2"            | 2 1/4"        |     |               | 4"     |        |                    | BRNG - 090°   |
| WEARPOINT         |    | ↓                 | 2 1/4"        |     |               |        | 3 7/8" | - .700             | < 80% WIRE DIAMETER                                 |
| UPPER END         |    | 2 1/4"            |               | 2"  |               | 3 3/4" |        |                    | UNKNOWN - CHAIN ENTERS BRNG - BOTTOM VERTICALLY     |
| WEARPOINT         |    | ↓                 |               | 2"  |               |        | 3 1/2" | - .705             | < 80% WIRE DIAMETER                                 |
| UPPER END         |    | 2 1/2"            | 2 1/4"        |     |               | 4 1/4" |        |                    | BRNG - 240°   |
| WEARPOINT         |    | ↓                 | 2 1/4"        |     |               | 4"     |        | - .700             |   |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility 0'-1' D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

ABOVE (1) LINK LENGTHS  
LEGS 143-15"  
LEGS 244-14"

(CONTINUED)



# CONTINUED

MOORING NO.: FC40 2 CLASS: F LOCATION: NWS SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_

WATER DEPTH: 40' / 10' ANCHOR SIZE/TYP: NI BUOY TYPE: REG TOP (10')

DATE: 2/1/82 ENGINEER-IN-CHARGE: H. WHITFIELD DIVER: J. WRIGHT

TYPE MOORING: ☒ RISER ☐ TELEPHONE R. PLATT

| COMPONENTS                    | NI | CONDITION           |               |     |               |     |     | UW VOLT<br>READING | COMMENT  |
|-------------------------------|----|---------------------|---------------|-----|---------------|-----|-----|--------------------|--|
|                               |    | NEW<br>FROM<br>LAST | SINGLE LINK % |     | DOUBLE LINK % |     | D   |                    |  |
| BUOY-TOP HARDWARE             |    |                     | 90+           | 80+ | 90+           | 80+ | 80- |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |
| RISER                         |    |                     |               |     |               |     |     |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |
| GROUND RING                   |    |                     |               |     |               |     |     |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |
| GROUND<br>LEG<br>NO. <u>4</u> |    | <u>2 1/2"</u>       |               |     |               |     |     |                    | <u>UNKNOWN - CHAIN FUTTERS</u><br><u>BRUG - BOTTOM VERTICALLY</u><br><u>&lt; 80% WIRE DIAMETER</u> |
|                               |    | <u>↓</u>            |               |     |               |     |     |                    |  |
| GROUND<br>LEG<br>NO. —        |    |                     |               |     |               |     |     |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |
| GROUND<br>LEG<br>NO. —        |    |                     |               |     |               |     |     |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |
| GROUND<br>LEG<br>NO. —        |    |                     |               |     |               |     |     |                    |  |
|                               |    |                     |               |     |               |     |     |                    |  |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility 0'-1' D = depth NI = not inspected, inaccessible

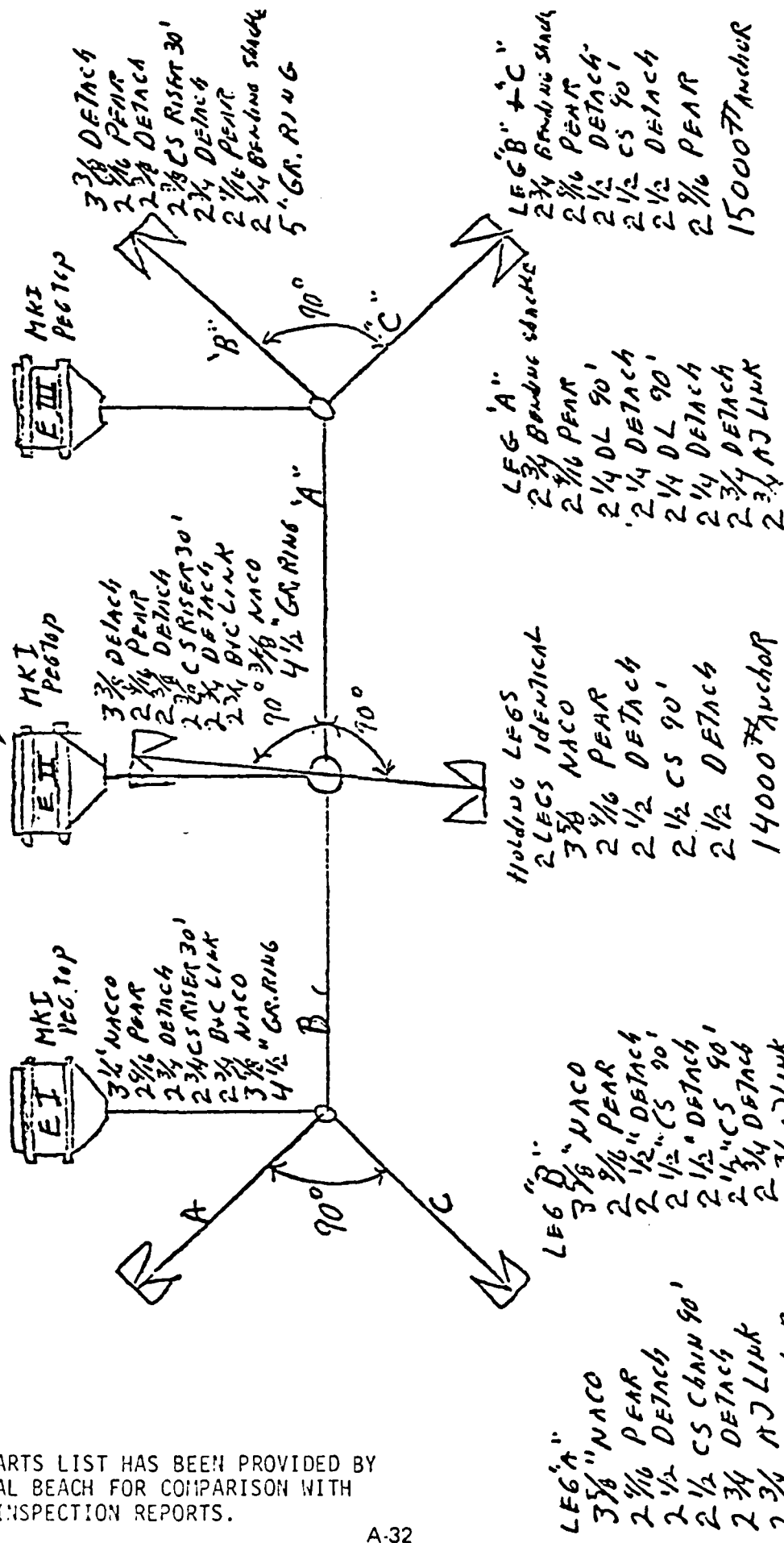
\*Measured Depth/Depth to Mean Low Water Springs

NOTE (2) CHAIN LINKS NEAR THE WEARPOINTS OF LEGS TWO AND FOUR ARE LOCKED AND SHINY.

# SEAL BEACH ECHO MOORING ARRAY

LAI 5-23-74

THIS PARTS LIST HAS BEEN PROVIDED BY  
NWS SEAL BEACH FOR COMPARISON WITH  
DIVER INSPECTION REPORTS.



## INSPECTION RESULTS ECHO THREE

### Buoy

This 10 foot diameter Peg Top buoy (S/N 16) is in good condition. The buoy has two fenders and a chafing rail made of rubber. Earlier damage to the lower fender has been repaired. The buoy has two zinc anodes attached. The measurements of these anodes are 35" x 3" x 3 1/2" and 36" x 3 3/4" x 3 1/2". Three lighters were moored at the time of the inspection.

The topside hardware has been painted, with the exception of the detachable links which are rusty. The padeye shows signs of slight wear.

### Riser

The riser measured greater than 90 percent of original 2 3/4 inch wire diameter and is in good condition. The ground ring is resting on the bottom in about 41 feet of water and measured between 80 and 90 percent of its original wire diameter.

### Ground Legs

All three ground legs were buried in bottom mud and were inaccessible for inspection.

### Conclusions/Recommendations

A ground ring measurement of >80% would normally be cause for the downgrade of a mooring by one classification, even if no ground legs were inspected. In the case of mooring Echo Three, this would mean a downgrading from Class B to Class C (using as-built data to determine the original classification). However, the fact that none of the ground legs were inspected should be considered in the evaluation of this mooring. This is true because of the poor condition of the ground legs and connecting hardware in moorings Echo One and Echo Two, which were installed at the same time as Echo Three. Therefore, downgrading of this mooring must be considered. In addition, it is recommended that use of this mooring also be limited, when possible, and that its loadings be limited to the F Class loads as recommended for the two other Echo moorings.

MOORING NO.: FCHO 3 CLASS: F LOCATION: NWS SEAL BEACH AT: LONG: \_\_\_\_\_

WATER DEPTH: 43' 41.5 TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPE: UI BUOY TYPE: REG TOP (10')

DATE: 9/1/82 ENGINEER-IN-CHARGE: M. WALTER DIVER: M. HESERVE

| COMPONENTS             | NI | CONDITION              |               |     |     |               |     |     | U/W VOLT READING | COMMENT |   |
|------------------------|----|------------------------|---------------|-----|-----|---------------|-----|-----|------------------|---------|---|
|                        |    | NEW FROM<br>PAPDS LIST | SINGLE LINK % |     |     | DOUBLE LINK % |     |     |                  |         |   |
|                        |    |                        | 90+           | 80+ | 80- | 90+           | 80+ | 80- |                  |         | D   |
| BUOY TOP HARDWARE      |    |                        |               |     |     |               |     |     |                  |         |   |
| NEAR BUOY              |    | 3 1/4"<br>2 1/4"       | 2 3/4"        |     |     | 5"            |     |     |                  | -986    | TWO ADDRES ON BUOY - SIZE<br>35" x 3" x 3 1/2" AND 36" x 3 3/4" x 3 1/2" (S/N 16) |
| MIDDLE                 |    | ↓                      |               |     |     |               |     |     |                  |         | LINK LENGTH 17"   |
| NEAR GRD RG            |    | ↓                      |               |     |     |               |     |     |                  | -977    |   |
| GROUND RING            |    | 5"                     | 4 1/4"        |     |     |               |     |     | 41'              | -684    | LYING ON BOTTOM -<br>NO MARINE GROWTH   |
| GROUND<br>LEG<br>NO. 1 |    | 2 1/2"                 |               |     |     |               |     |     |                  |         | BURIED  |
| WEARPOINT              |    |                        |               |     |     |               |     |     |                  |         |   |
| UPPER END              |    | 2 1/2"                 |               |     |     |               |     |     |                  |         |   |
| WEARPOINT              |    |                        |               |     |     |               |     |     |                  |         | BURIED  |
| UPPER END              |    | 2 1/2"                 |               |     |     |               |     |     |                  |         |   |
| WEARPOINT              |    |                        |               |     |     |               |     |     |                  |         | BURIED  |
| GROUND<br>LEG<br>NO. 2 |    | 2 1/2"                 |               |     |     |               |     |     |                  |         |   |
| UPPER END              |    |                        |               |     |     |               |     |     |                  |         |   |
| WEARPOINT              |    |                        |               |     |     |               |     |     |                  |         | BURIED  |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

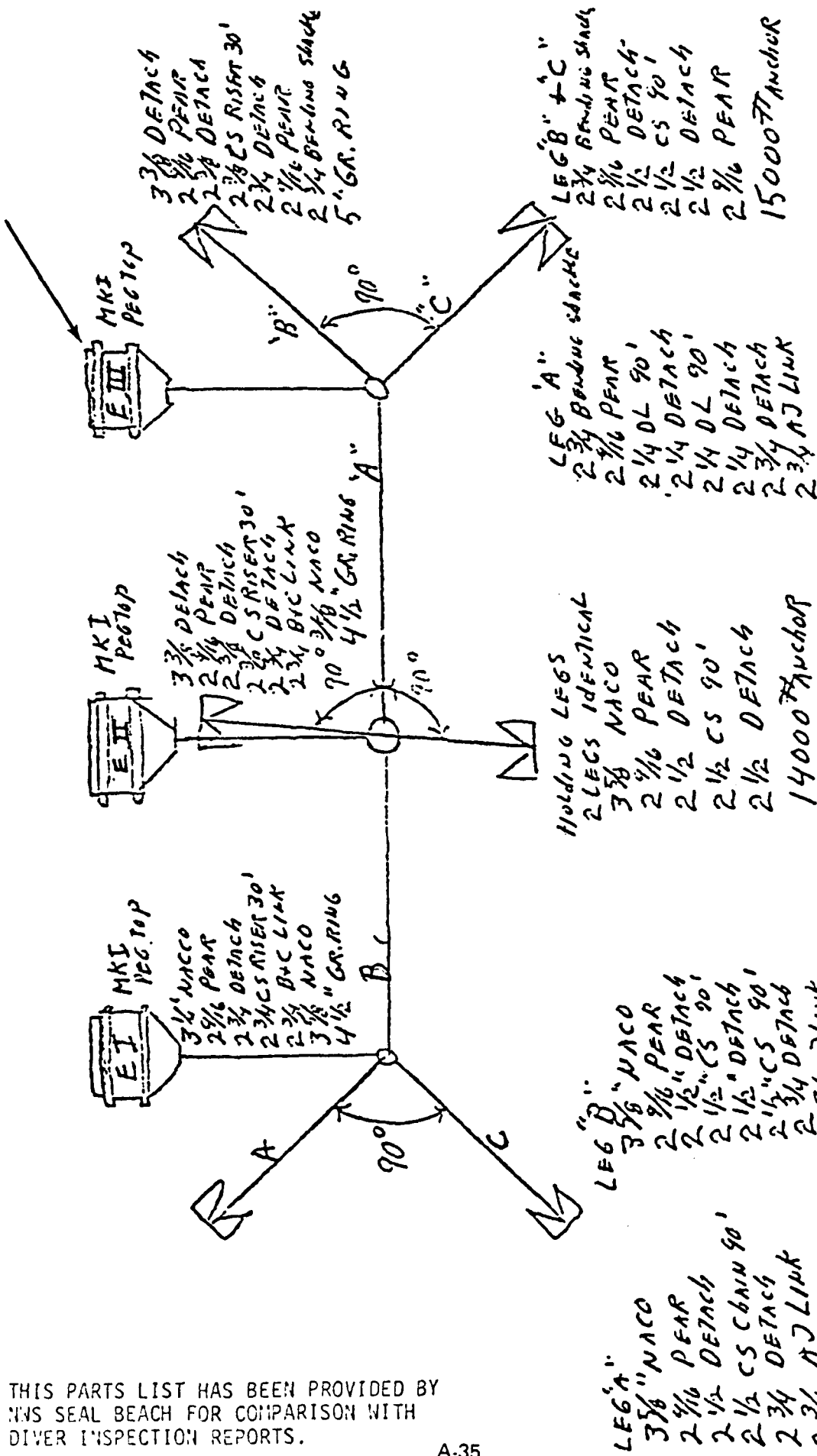
Visibility 0-1' D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE (1) WHEN INSPECTED, THE BUOY WAS TIPPED OVER WITH THREE LIGHTERS TIPPED UP.  
(2) LOWER BUOY FENDER HAD SOME DAMAGE BUT HAS BEEN REPAIRED

# SEAL BEACH ECHO MOORING-ARRAY

Laid 5-23-74



THIS PARTS LIST HAS BEEN PROVIDED BY  
NWS SEAL BEACH FOR COMPARISON WITH  
DIVER INSPECTION REPORTS.

A-35

## INSPECTION RESULTS

### ALPHA ONE

#### Buoy

This is a 12 foot diameter drum-type buoy with a 4'3" freeboard. The buoy is completely fiber-glassed including the hatch covers. The buoy has two wooden fenders and two chafing rails made of rubber. The hawse pipe is equipped with a rubbing casting. Cathodic protection has not been applied to the buoy.

#### Riser

The riser chain was measured to be greater than 90 percent of the original 2 3/4" wire diameter and was covered with medium thickness marine growth. The riser chain is in good condition. The ground ring was located at a water depth of 45 feet and appeared to be in satisfactory condition.

#### Ground Legs

About 15 feet of each of the ground legs was visible below the ground ring prior to entering the bottom. Measurements of the upper portion of these legs were all in excess of 90 percent of the original 2 1/2" wire diameter. The ground legs are assumed to be in good condition.

#### Recommendations

None — this mooring is in satisfactory condition for continued use as a Class B mooring.

MOORING NO.: ALPHA 1 CLASS: E LOCATION: NWS SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_  
 WATER DEPTH: 50' 44.5' TYPE MOORING: ☒ RISER ☐ TELEPHONE \_\_\_\_\_ ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUH (12')  
 DATE: 9/3/82 ENGINEER IN CHARGE: M. WALTER DIVER: J. FLSASSER  
(0830)

| COMPONENTS              | NI        | CONDITION    |               |     |               |       |     | UW VOLT<br>READING | COMMENT                                     |
|-------------------------|-----------|--------------|---------------|-----|---------------|-------|-----|--------------------|---|
|                         |           | NEW          | SINGLE LINK % |     | DOUBLE LINK % |       | D   |                    |   |
| BUOY TOP HARDWARE       |           | ASSUMED      | 90+           | 80+ | 80+           | 90+   | 80+ |                    |   |
|                         | NEAR BUOY | 3/4<br>2 3/4 |               |     |               | 5"    |     | - .663             | FIBERGLASS COVERED BUOY.<br>NO BUOY ANODES. |
|                         | MIDDLE    | ↓            |               |     |               |       |     |                    | LINK LENGTH 12"                             |
| NEAR GRD RG             |           | 3/4          |               |     |               | 5"    |     | - .670             |   |
| GROUND RING             |           |              |               |     |               |       | 45' |                    |   |
| GROUND LEG NO. <u>1</u> |           | 2 1/2        | 2 1/4         |     |               | 4 1/2 |     | - .665             | BRNG 090°                                   |
| WEARPOINT               |           |              |               |     |               |       |     |                    |   |
| GROUND LEG NO. <u>2</u> |           | 2 1/2        | 2 1/4         |     |               | 4 1/2 |     | - .665             | BRNG 260° LINK LENGTH 15"                   |
| WEARPOINT               |           |              |               |     |               |       |     |                    |   |
| GROUND LEG NO. <u>3</u> |           | 2 1/2        | 2 1/4         |     |               | 4 1/2 |     | - .668             | BRNG 330°                                   |
| WEARPOINT               |           |              |               |     |               |       |     |                    |   |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK  
 Visibility \_\_\_\_\_ D = depth

NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NO PARTS LIST AVAILABLE FOR ALPHA 1



## INSPECTION RESULTS

### ALPHA TWO

#### Buoy

The buoy is a 12 foot diameter drum in satisfactory condition. The buoy is painted white above the water line and black below and is identified as S/N 120. There is a large wooden fender near the top of the buoy, but no lower fender is present. The buoy has only one hatch topside; two zinc anodes, measured at 35" x 4" x 3", are attached. The buoy freeboard was measured at 5'2". The buoy was listing about 20° under the load of three lighters at the time of the inspection.

The paint on the topside hardware was worn, and there are rust modules and flaking on some components.

#### Riser

The riser chain measured greater than 90 percent of original wire diameter and is in good condition. The ground ring was located at a depth of about 40 feet and measured greater than 90 percent of original wire diameter.

#### Ground Legs

All three ground legs measured less than 80 percent of original wire diameter. The legs were free of marine growth and had worn, shiny links in the wear zone. Two legs were reported to be crossed. All three ground legs are in poor condition.

#### Recommendations

Normal procedures call for a mooring to be downgraded one classification whenever a measurement between 80 and 90 percent of original wire diameter is recorded. A measurement of less than 80 percent in any component is cause for a mooring to be removed from service until an overhaul is performed. There is no precedent for downgrading a mooring twice based on a <80% reading. However, in the case of mooring A-2, downgrading by two classifications would still allow the E Class mooring loads operationally required by NAVWPNSTA Seal Beach. Therefore, it is recommended that use of this mooring be limited, whenever possible, and that it never be subjected to loads in excess of E Class loads limits defined in NAVFACENGCOM Design Manual DM-26.

MOORING NO.: ALPHA 2 CLASS: E LOCATION: AN'S SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_  
 WATER DEPTH: 45' / 39.5' TYPE MOORING: ☒ RISER ☐ TELEPHONE J. MESERVE ANCHOR SIZE/TY: NI BUOY TYPE: DRUM (12')  
 DATE: 9/2/82 ENGINEER-IN CHARGE: M. WALTER DIVER: J. ELSASSER  
 (1000)

| COMPONENTS        | NI        | CONDITION |               |        |     |               |     |        |        | UW VOLT<br>READING | COMMENT  |
|-------------------|-----------|-----------|---------------|--------|-----|---------------|-----|--------|--------|--------------------|--|
|                   |           | NEW       | SINGLE LINK % |        |     | DOUBLE LINK % |     |        | D      |                    |  |
|                   |           |           | 90+           | 80+    | 80- | 90+           | 80+ | 80-    |        |                    |  |
| BUOY-TOP HARDWARE |           | ASSUMED   |               |        |     |               |     |        |        | -914               | TWO ANODES ON BUOY-SIZE<br>35" X 4" X 3" (S/N 120) |
|                   | NEAR BUOY | 2 1/2"    | 2 1/2"        |        |     | 4 1/2"        |     |        |        |                    | LINK LENGTH 15 1/4"                                |
|                   | MIDDLE    | ↓         |               |        |     |               |     |        |        | -825               |  |
| NEAR GRD RG       |           | ↓         |               |        |     |               |     |        |        |                    |  |
| GROUND RING       |           | 4 3/4"    | 4 3/4"        |        |     |               |     |        |        | -789               |  |
| UPPER END         |           | 2 1/2"    |               | 2 1/8" |     |               |     | 3 3/4" | 3 3/4" | -779               | BRNG 030°  |
| WEARPOINT         |           |           |               |        |     |               |     |        |        |                    |  |
| UPPER END         |           |           |               | 2 1/8" |     |               |     | 3 1/4" | 3 1/4" | -825               | BRNG 120°  |
| WEARPOINT         |           |           |               |        |     |               |     |        |        |                    |  |
| UPPER END         |           |           |               | 2 1/8" |     |               |     | 3 3/4" | 3 3/4" |                    | BRNG- 320°   |
| WEARPOINT         |           | ↓         |               |        |     |               |     |        |        |                    |  |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility \_\_\_\_\_ D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE (1) WHEN INSPECTED, BODY WAS TIPPED OVER WITH THREE YANS TIED UP.  
 (2) ALL THREE LEGS ARE WORN AND SHINY IN THE WEAR ZONE  
 (3) LEGS TWO AND THREE ARE TWISTED TOGETHER

NO PARTS LIST AVAILABLE FOR ALPHA 2

## INSPECTION RESULTS

### ALPHA THREE

#### Buoy

The buoy, S/N 140, is a painted 12 foot diameter drum type with hawse pipe. There are four hatches topside, with one rubber fender and two anodes, measuring  $34 \frac{1}{2} \times 4 \frac{1}{2} \times 3$ , attached to the buoy. There were three lighters moored at the time of the inspection. Freeboard was recorded as 3'5".

#### Riser

The riser chain measured between 80 and 90 percent of its original wire diameter at a point near the ground ring and is in fair condition. The ground ring was located a few inches off the bottom in about 20 feet of water. The ring was reported to be clean and shiny.

#### Ground Legs

One leg was completely buried. The two other legs had clean, shiny links in the wear zone and measured between 80 and 90 percent of original wire diameter. The two visible legs were crossed. The ground legs are in fair condition. Divers noted that the three end links connecting the ground legs to the ground ring are grouped on one side of the ring on a bearing of about  $170^{\circ}$  M.

#### Recommendations

Due to the measured riser and ground leg chain wear, this mooring should be downgraded from a Class C to a Class D mooring. However, it is in satisfactory condition for continued utilization in its current capacity as a Class E mooring.

MOORING NO.: ALPHA 3 CLASS: E LOCATION: NWS SALLERH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_  
 WATER DEPTH: 25' / 20' TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPE: N I BUOY TYPE: DEUM  
 DATE: 9/2/82 ENGINEER-IN-CHARGE: M. WALTER DIVER: H. RICHARDSON  
(1115) S. WENDT

| COMPONENTS        |             | NI | CONDITION |               |     |     |               |        |     |    | UW VOLT READING | COMMENT |  |
|-------------------|-------------|----|-----------|---------------|-----|-----|---------------|--------|-----|----|-----------------|---------|--|
|                   |             |    | NEW       | SINGLE LINK % |     |     | DOUBLE LINK % |        |     | D  |                 |         |  |
|                   |             |    |           | 90+           | 80+ | 80- | 90+           | 80+    | 80- |    |                 |         |  |
| * ASSUMED         |             |    |           |               |     |     |               |        |     |    |                 |         |  |
| BUOY TOP HARDWARE |             |    |           |               |     |     |               |        |     |    |                 |         |  |
| RISER             | NEAR BUOY   |    | 3 3/4"    | 3"            |     |     | 5 1/2"        |        |     |    |                 | - .936  | TWO ADDITIONAL BUOY - SIZE 34 1/2" X 4 1/2" X 3" (S/N 140) |
|                   | MIDDLE      |    |           |               |     |     |               |        |     |    |                 |         | LINK LENGTH 16"  |
|                   | NEAR GRD RG |    |           | ↓             |     |     |               | 5 1/4" |     |    |                 | - .836  |  |
| GROUND RING       |             |    |           |               |     |     |               |        |     |    |                 |         |  |
| GROUND LEG NO. 1  | UPPER END   |    | 2 1/4"    | 2 1/4"        |     |     |               |        |     | 4" |                 |         | NO GROWTH, SHINY, THREE FEET FROM BOTTOM                   |
|                   | WEARPOINT   |    |           |               |     |     |               |        |     |    |                 |         | LINK LENGTH 14"  |
| GROUND LEG NO. 2  | UPPER END   |    |           | 2 1/4"        |     |     |               |        |     | 4" |                 |         | SHINY - NO GROWTH  |
|                   | WEARPOINT   |    |           |               |     |     |               |        |     |    |                 |         | LINK LENGTH 14"  |
| GROUND LEG NO. 3  | UPPER END   |    |           |               |     |     |               |        |     |    |                 |         | SHINY - NO GROWTH  |
|                   | WEARPOINT   |    |           | ↓             |     |     |               |        |     |    |                 |         | BURIED   |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility \_\_\_\_\_ D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs

NOTE (1) BOY HAS HAD THREE  
 (2) LEGS 1 AND 2 ARE TWISTED TOGETHER  
 (3) ORIGINAL (NWS) WIRE SIZES ARE ASSUMED

NO PARTS LIST AVAILABLE FOR ALPHA 3

## INSPECTION RESULTS

### ALPHA FOUR

#### Buoy

The buoy, a 12 foot diameter painted drum with hawse pipe (S/N 146), is in good condition. The buoy has four hatches topside and two rubber fenders. Two zinc anodes were noted, measuring 34 1/4" x 5" x 3". There is some very slight pitting under the paint on the sides of the buoy. Three lighters were moored at the time of the inspection.

#### Riser

The riser chain measured between 80 and 90 percent of its original wire diameter and is in fair condition. The ground ring is buried in mud and barely visible at a depth of 36 feet.

#### Ground Legs

All three ground legs were completely buried and not accessible for inspection. They are assumed to be in fair condition.

#### Recommendations

Due to the measured riser chain wear, this mooring should be downgraded from a Class C to a Class D mooring. However, it is in satisfactory condition for continued utilization in its current capacity as a Class E mooring.

MOORING NO.: ALPHA 4 CLASS: E LOCATION: NWS SEAL BEACH LAT: \_\_\_\_\_ LONG: \_\_\_\_\_  
 WATER DEPTH: 40' / 36' TYPE MOORING: ☒ RISER ☐ TELEPHONE ANCHOR SIZE/TYPE: NI BUOY TYPE: DEPM  
 DATE: 9/2/82 ENGINEER-IN-CHARGE: H. WALTER DIVER: M. RICHARDSON  
(1300) S. WEEDT

| COMPONENTS             | NI          | CONDITION        |               |     |     |               |     |       | U/W VOLT<br>READING | COMMENT |  |
|------------------------|-------------|------------------|---------------|-----|-----|---------------|-----|-------|---------------------|---------|--|
|                        |             | NEW<br>ASSEMBLED | SINGLE LINK % |     |     | DOUBLE LINK % |     |       |                     |         |  |
|                        |             |                  | 90+           | 80+ | 80- | 90+           | 80+ | 80-   |                     |         | D  |
| BUOY-TOP HARDWARE      |             |                  |               |     |     |               |     |       |                     | -994    | TWO ADDRES ON BUOY - SIZE<br>34 1/4" x 5" x 3" (S/N 146) |
| RISER                  | NEAR BUOY   | 3 3/4<br>2 5/8   |               |     |     | 5"            |     |       |                     |         | LINK LENGTH 15"  |
|                        | MIDDLE      | ↓                |               |     |     |               |     |       |                     | -976    |  |
|                        | NEAR GRD RG | ↓<br>2 3/4       |               |     |     |               |     | 4 3/4 |                     |         |  |
| GROUND RING            |             |                  |               |     |     |               |     |       |                     | -732    | PARTIALLY BURIED IN THE<br>MUD BOTTOM                    |
| GROUND<br>LEG<br>NO. 1 | UPPER END   |                  |               |     |     |               |     |       |                     |         | BURIED   |
|                        | WEARPOINT   |                  |               |     |     |               |     |       |                     |         |  |
| GROUND<br>LEG<br>NO. 2 | UPPER END   |                  |               |     |     |               |     |       |                     |         | BURIED   |
|                        | WEARPOINT   |                  |               |     |     |               |     |       |                     |         |  |
| GROUND<br>LEG<br>NO. 3 | UPPER END   |                  |               |     |     |               |     |       |                     |         | BURIED   |
|                        | WEARPOINT   |                  |               |     |     |               |     |       |                     |         |  |

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK

Visibility 0-1' D = depth NI = not inspected, inaccessible

\*Measured Depth/Depth to Mean Low Water Springs



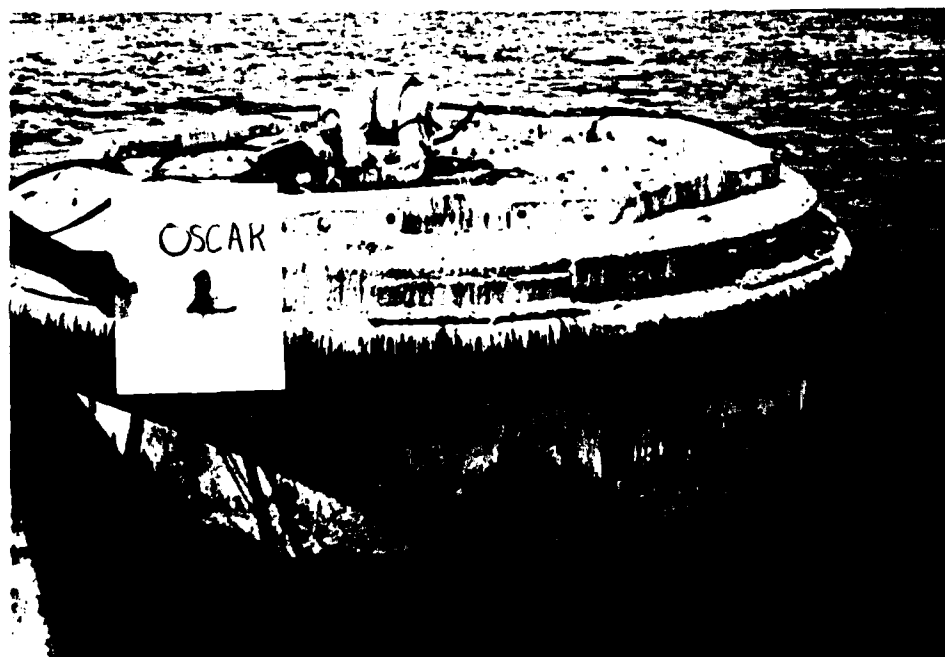
NO PARTS LIST AVAILABLE FOR ALPHA 4

**APPENDIX B**  
**PHOTOGRAPHS**

**This Appendix Contains Sample Photographs of the Seal Beach Mooring Installations**



Alpha 2 — Top jewelry rusting and pitting



Oscar 2 — Pitting, rusting on side of buoy

B-1



Oscar 3 — Severely worn padeye

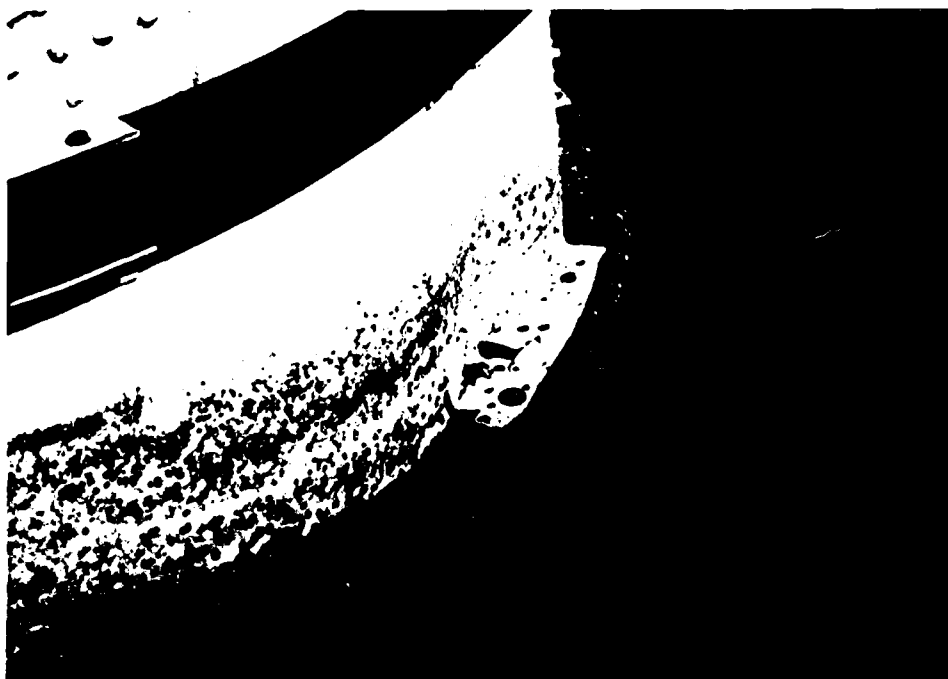


Oscar 7 — Buoy listing 25° - 30°

B-2



Echo 2 — Worn, rusted buoy hardware



Echo 3 — Temporary fender repair

APPENDIX C  
INSPECTION LOG AND MESSAGES

## SEAL BEACH LOG

| DATE    | ITEM   |
|---------|--|
| 8/29/82 | <ul style="list-style-type: none"><li>• Checked into Seal Beach Weapons Station to obtain pass.</li></ul>  |
| 8/30/82 | <ul style="list-style-type: none"><li>• Met with J. Orrico and LTJG Saltsman to brief them on purpose of visit.</li><li>• Divers inspected Oscar Eight and Oscar One.</li><li>• Stopped operations due to sick divers.</li></ul>                 |
| 8/31/82 | <ul style="list-style-type: none"><li>• Divers inspected Oscar One through Oscar Seven.</li></ul>  |
| 9/1/82  | <ul style="list-style-type: none"><li>• Divers redove Oscar One through Oscar Eight to obtain voltmeter and other measurements.</li><li>• Divers inspected FM Four at Long Beach.</li><li>• Divers inspected Echo One, Two, and Three.</li></ul> |
| 9/2/82  | <ul style="list-style-type: none"><li>• Divers inspected Alpha One, Two, Three, and Four.</li></ul>  |
| 9/3/82  | <ul style="list-style-type: none"><li>• Debrief at Seal Beach PW.</li></ul>  |
| 10/1/82 | <ul style="list-style-type: none"><li>• Preliminary Inspection Results (CHESNAVFACENGCOM Msg 011959Z Oct 82)</li></ul>   |

[illegible]

ROUTINE

R 211843Z JUL 82

FM CHESNAVFACEGCOM WASHINGTON DC

TO WPNSTA SEAL BEACH CA

INFO COMNAVFACENGCOM ALEXANDRIA VA  
UCT TWO

WESTNAVFACENGCOM SAN BRUNO CA

BT  
UNCLAS //N11000//

SUBJ: FLEET MOORING INSPECTIONS; REQUEST FOR INFORMATION

1. UCT TWO IS PROVIDING DIVER SUPPORT TO CHESNAVACENGCOM FOR INSPECTION OF THE FLEET MOORING AT SEAL BEACH IN MID OR LATE SEP 82. THIS IS PART OF THE NAVFAC FLEET MOORING MAINTENANCE PROGRAM.

2. P.O.I.C HURT, UCT TWO WILL CONDUCT AND ARRANGE INITIAL SITE VISIT TO GATHER DATA NEEDED FOR INSPECTION PLANNING BY CHESNAVFAC-FNGCOM.

3. REQUEST COPY OF FOLLOWING DATA FOR PICK UP BY P.O.I.C DURING VISIT.

- A. CURRENT AS-BUILT DRAWINGS PER MOORING.
- B. PAST MOORING INSPECTION REPORTS.
- C. SCHEDULE OF PLANNED MAINTENANCE AND OVERHAUL CYCLE.
- D. ENVIRONMENTAL DATA; FORECASTER'S HANDBOOK, SITE MAPS, CHARTS, BATHYMETRY, STORM RECORDS.
- E. ASHORE MOORING MATERIAL INVENTORY.
- F. MOORING USAGE DATA.
- G. FLEET MOORING REQUIREMENTS

4. AVAILABILITY OF DATA ASSUMED UNLESS OTHERWISE NOTIFIED. POINT  
OF CONTACT AT THIS COMMAND IS MR. JAMES MCLAUGHLIN, AT A/Y 288-3881.  
BT

DLVR:CHESNAVFACENGCOM WASHINGTON DC(9)...,ORIG

RTD:000-000/COPIES:0009

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CSN:RXOY0U416

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202/19:06Z

211843Z JUL 82

CHESNAYFACENGCOM WASHINGTON DC

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FROM CHESNAVFACENGCOM WASHINGTON DC

TO WPNSTA SEAL BEACH CA

INFO COMNAVFACENGCOM ALEXANDRIA VA

UCT TWO

WESTNAVFACENGCOM SAN BRUNO CA

UNCLAS //11000//

SUBJ: FLEET MOORING INSPECTIONS

1. AS PART OF THE NAVFAC FLEET MOORING MAINTENANCE PROGRAM, CHESNAVFACENGCOM WILL INSPECT THE FLEET MOORINGS AT SEAL BEACH WITH DIVER SUPPORT FROM UCT TWO. E.I.C. MS. M. WALTER, P.O. 433-3881 AND UCT-TWO WILL ARRIVE APPROXIMATELY 30 AUG 1982.
2. CONCURRENCE IS ASSUMED UNLESS OTHERWISE NOTIFIED. POINT OF CONTACT AT THIS COMMAND IS MR. JAMES MCLAUGHLIN, A/V 288-3881

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DISTR

|  |  |   |  |
|--|--|---|--|
| DRAFTER TYPED NAME TITLE OFFICE SYMBOL PHONE |  | SPECIAL INSTRUCTIONS  |  |
| M. M. WALTER<br>433-3881                     |  | FP0-1FP {PDC}<br>11 AUG 82  |  |
| TYPED NAME TITLE OFFICE SYMBOL AND PHONE     |  | COPY TO: FP0-1FP{PDC}...FP0-1FP2<br>...FP0-1FP...09...00...<br>0161...DAILY...FP0-1C7 |  |
| G. H. SELTZER, LCDR, CEC, USN                |  | SECURITY CLASSIFICATION   |  |
| SIGNATURE                                    |  | UNCLASSIFIED  |  |
| DD FORM 173/2 (OCT 81)                       |  | DATE TIME GROUP<br>121809Z AUG 82   |  |

PREVIOUS EDITION IS OBSOLETE

GPO: 1979 - 302-174

C-4

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2741000

FROM: CHESNAVFACENGCOM WASHINGTON DC

TO: WPNSTA SEAL BEACH CA

INFO COMNAVFACENGCOM ALEXANDRIA VA

PWC SAN DIEGO CA

UCT TWO

UNCLAS //N11000//

SUBJ: FLEET MOORING INSPECTION; SEAL BEACH

1. AS PART OF THE FLEET MOORING MAINTENANCE PROGRAM, CHESNAVFACENGCOM SUPPORT FROM NCT-2, INSPECTED FLEET MOORINGS AT SEAL BEACH FROM 30 AUG-3 SEP 82. RESULTS OF THIS INSPECTION INDICATE THAT THE MOORINGS ARE IN GOOD CONDITION. HOWEVER, DUE TO THE NORMAL CYCLE OF CHAIN DETERIORATION AND WEAR, SEVERAL MOORINGS REQUIRE IMMEDIATE ATTENTION.

2. INSPECTION RESULTS SHOW SERIOUS WEAR ON TWO MOORINGS, ECHO-2 AND ALPHA-2. AS DISCUSSED IN A PHONECON BTWN M. WALTER AND J. ORRICO, 28 SEP 82, NORMAL PROCEDURE INDICATES A DOWNGRADE OF ONE CLASSIFICATION WHEN MEASUREMENTS OF +80% ARE FOUND. HOWEVER, MEASUREMENTS OF -80% WERE FOUND ON MOORINGS ECHO-2 AND ALPHA-2. ALTHOUGH A DOWNGRADE OF TWO CLASSIFICATIONS WOULD STILL BE HIGHER THAN THE REQUIRED CLASSIFICATION, THERE IS NO PRECEDENT FOR DOWNGRADING TWICE.

DISTR:

WRITER: M. WALTER, TITLE: OFFICE SYMBOL: PHONE

M. WALTER  
33881FPO-1FP PDC  
1 OCT 82

SPECIAL INSTRUCTIONS

COPY TO: FPO-1FP PDC...FPO-1FP  
FPO-1FP2...DD...DD...  
DLB1...DAILY

TYPE: NAME: TITLE: OFFICE SYMBOL: PHONE

G. H. SELTZER, CDR, CEC USN

SECURITY CLASSIFICATION

UNCLASSIFIED

DATE

6/19592

DD FORM 173/2 (OCH)

PREVIOUS EDITION IS OBSOLETE

11 SEP 1982 100-120

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THEREFORE CHESNAV DIV RECOMMENDS LIMITED USE OF THESE MOORINGS UNTIL AN OVERHAUL IS SCHEDULED.

3. INSPECTION RESULTS SHOW SIGNIFICANT WEAR ON SEVEN MOORINGS: OSCAR-1 THRU 5, ECHO-1 AND ALPHA 3. SINCE THE DOWNGRADED CLASSIFICATION IS HIGHER THAN THE REQUIRED CLASSIFICATIONS, THE MOORINGS SHOULD BE ADEQUATE FOR THEIR INTENDED USE.

4. ON MOORINGS OSCAR 6, OSCAR 8 AND ALPHA 4, DIVERS MEASURED  $\pm 80\%$  BUT WERE UNABLE TO MEASURE THE BURIED GROUND LEGS.

THEREFORE, A DOWNGRADE IS RECOMMENDED BUT NO CONCLUSION ON THE HOLDING CAPACITY OF THESE MOORINGS CAN BE MADE.

5. RISERS OF MOORINGS OSCAR-7 AND ECHO-3 MEASURED  $\pm 70\%$ . HOWEVER, DUE TO THE BURIED GROUND LEGS, NO CONCLUSIONS ON THE HOLDING CAPACITY OF THESE MOORINGS CAN BE MADE.

6. THE 28 SEP 82 PHONECON BTWN M. WALTER AND J. ORRICO INDICATES THE SEVERE WEAR ON THE PAD EYE OF OSCAR-3 AND THE BADLY-LISTING BUOY 0. OSCAR-7 WILL BE INVESTIGATED AS SOON AS POSSIBLE.

7. A SUMMARY OF SIGNIFICANT FINDINGS AND RECOMMENDATIONS ARE AS FOLLOWS:

DISTR:

DRAFTER (TYPE NAME, TITLE, OFFICE SYMBOL AND PHONE)

SPECIAL INSTRUCTIONS

TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

DATE TIME GROUP

DD FORM 173/2 (OCR)

PREVIOUS EDITION IS OBSOLETE

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DATE

## FROM: SIGNIFICANT

## ORIGINAL

## MOORING FINDINGS

## CLASSIFICATION RECOMMENDATION

ECHO-2 -80%

F

LIMIT USE

ALPHA-2 -80%

E

LIMIT USE

OSCAR-1 +80%

E

DOWNGRADE TO 'D'

OSCAR-2 +80%

E

DOWNGRADE TO 'D'

OSCAR-3 +80%

E

DOWNGRADE TO 'D'

SEVERE PADEYE WEAR

INVESTIGATE CONDI-

TION

OSCAR-4 +80%

E

DOWNGRADE

OSCAR-5 +80%

E

DOWNGRADE TO 'D'

ECHO-1 +80%

F

DOWNGRADE TO 'D'

ALPHA-3 +80%

E

DOWNGRADE TO 'D'

OSCAR-6 RISER +80%

E

DOWNGRADE

OSCAR-8 RISER +80%

E

DOWNGRADE

ALPHA-4 RISER +80%

C

DOWNGRADE

OSCAR-7 BUOY LISTS

E

INVESTIGATE CONDI-

TION

FOR FURTHER INFO CONCERNING THIS INSPECTION CONTACT E.I.C. M. WALTER  
AT A/V 288-3881.

DISTR:

DRAFTER TYPE NAME, TITLE, OFFICE SYMBOL, PHONE

SPECIAL INSTRUCTIONS

TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

REMARKS

SIGNATURE

SECURITY CLASSIFICATION

DATE TIME GROUP

DD FORM 173/2 (OCH)

PREVIOUS EDITION IS OBSOLETE

GPO: 1982 0-211-111

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